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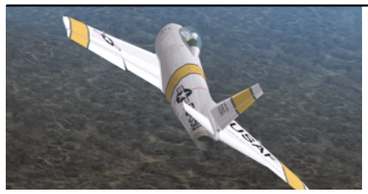

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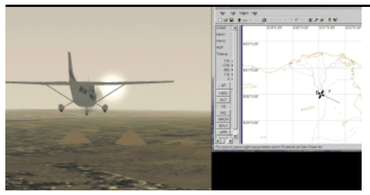

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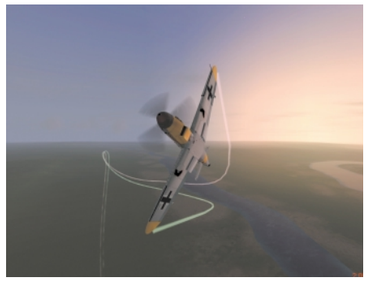

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PC PILOT

THE CREW

EDITORIAL

Managing Editor:
Dermot Stapleton (derm@pcpilot.net)

Contributors:
Kenji Takeda, Stephen Heyworth, Bill Stack, Greg Gott, Joe Lavery, Andy Moon, Mike Hodges, Len Hjalmarson, Christopher Jarman, Derek Smalls

Printed and Distributed by:
The Producers Limited
Tel: +44 (0)1480 496446

BUSINESS AND MANAGEMENT

Publishing Director:
Mungo Amyatt-Leir (mungo@pcpilot.net)

Production Director:
Andy Payne (andy@pcpilot.net)

Design and Layout by:
James Lawrence, Richard Pomfret, Darryl Fickling & Oliver Hilton

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SUBMISSIONS

We will gladly accept and review for publication any letters, articles, photographs or other contributions. We cannot guarantee publication nor, regrettably, return items sent to us or be responsible for their loss. We will try and reply where possible. Any letters are assumed suitable for publication unless we are otherwise notified.

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FEEDBACK

PC Pilot Limited,
PO Box 11, St Ives PE27 3GW,
United Kingdom
Tel: +44 (0)870 9000422
Fax: +44(0)1480 357186
Email: mail@pcpilot.net
Website: www.pcpilot.net

Into the shops!

Welcome to another great issue of PC Pilot and a very warm greeting to anyone who has bought PC Pilot in their local newsagent. Yes, after just over a year of distributing the world's favourite flight simulation magazine mainly from our website, we've taken the plunge and put PC Pilot on the shelves of UK retailers. PC Pilot has already been on sale in US bookstores since last year and doing very well, but the game on our home turf is a lot tougher. In Britain we read more magazines than pretty well anywhere else in the world and the selection in most UK newsagents would make overseas readers green with envy. So, now there's even more chance to top up with regular supplies of the magazine that fuels more simulated fliers than any other!

There's plenty going on in the virtual airways at the moment, with news about the latest versions of Fly! and Flight Simulator, as well as a flurry of new standalone online simulators. We've also heard that another two well-known freeware developers have thrown in the towel. One group advises that they are fed up receiving abusive mail from their 'customers' and the other has had enough of seeing their creations repainted and posted on other websites. In total contrast, Phoenix Simulations (one of those evil commercial developers) have announced that they will be releasing a user edit system, to allow third party artists to re-paint their aircraft. On the commercial publishing front, 'war starts at midnight' as Just flight and WAS square up to each other across a legal no-man's land.

You can't trust the Internet at the moment, either. In a recent press release from NetBenefit we're told that the average UK surfer has three different e-mail addresses. Using our layout office as a test, we could only get ten addresses from seven staff. Asking around elsewhere produced similar results, so we've calculated that somewhere out there is a bloke with about two hundred different aliases! Very handy for anonymous stirring of trouble and abusing freeware developers in all those chat rooms…

We can only hope that at least the rumblings in the freeware world will die down, so that everyone can get back to enjoying a unique feature of this fantastic hobby (strains of 'Give peace a chance' and cloying smell of patchouli oil are wafting from the editor's office). Perhaps we're being too idealistic, but it would be nice if everyone called a truce and let the freeware groups go back to designing stuff for flight simulation. The green ink brigade should return to sending their hate mail to Luton council, not freeware developers.

See you in the next issue, which will be out in the shops on 16th June.

Dermot Stapleton
derm@pcpilot.net

COMMS

FROM: Emmet Swinburn

Unfortunately my joystick broke and looking for a new one, I read with interest your article about the latest joysticks. The price that you have stated for the Logitech Strike force 3D is £35.99. Where did you get this price from, as the best I have found is about £84? The one below that Wingman force 3D was still £40, this last price was a PC World price. Is this a printing error? You also state that the Microsoft FF2 is £52.99. The best I've found is above £80. Please help as soon as possible as Flight sim isn't quite the same using a mouse.

We reply:

Whoops! It looks like the price we were quoted (we used www.buy.com) was for the Wingman Force 3D (about $59, or £36) but the Strike Force is $85 (about £59). Our fault for not checking. Interestingly, we are told that Logitech quote it at over £80 on the English section of their website - despite the supposedly strong pound. We always shop around on the net to find hardware prices, as they can be so varied. The price we quoted for the Microsoft stick was the US price, converted into Sterling. Unfortunately, as you can see, the US seems to fare better than the UK for value for money, but then their prices don't include VAT. However, as a UK magazine we also check these prices with UK websites and www.jungle.com are selling the Sidewinder FF2 for £67.99 incl. VAT and Simply Computers are quoting around £69 for the Logitech. We have real difficulty quoting prices, as the makers RRP varies from one country to another and the UK retailer we usually rely on for 'over the counter' as opposed to 'over the web' prices is RC Simulations, who pride themselves on very competitive prices for most kit.

What's the score?

FROM: Steve Halpern, Flight One

I am writing to spell my disappointment at your review of Ultimate Airlines.

The reviewer seemed to mostly look at the flight plan aspect of the program and completely left out many of the most important aspects of the program.

1. The plans export to many different formats, not just FS2000 and Proflight. This includes Radar Contact, FSNavigator 4, Squawkbox, ACS-GPS and the Flight One 747 and Corporate Pilot FMC's.
2. There is a full ambient sound system. This includes real airport sounds in stereo, as well as boarding and arrival calls for the flights.
3. There is no mention of the fact that you can join any flight in progress, or start the flights for FS2000 from within Ultimate Airlines and have the aircraft placed at takeoff position, or using the free SnapIt tool that is available, start right at gate positions.
4. And so very important to virtual pilots, there was no mention of the Virtual Airline capabilities. There are now a total of 16 virtual airlines on www.flight1.com/virtual.htm that have routing schedules compiled for use in Ultimate Airlines through the tools we provide.

I feel that a magazine has some level of responsibility in making sure a review is fair and realise the affect an incomplete review can have. In this case, the review does not inform the reader about elements that they could really enjoy. Ultimate Airlines is not just a flight plan program, but a tool for those that love the feel and ambience of real-world airports. I hope you will revisit Ultimate Airlines in a different light in the future.

We reply:

In nine issues of PC Pilot we've never had any adverse comment from a publisher about one of our reviews, so we took Steve's letter very seriously. In other correspondence from Flight One we understood that a major cause of contention was our score of three stars, so we feel that some explanation of the scoring system PC Pilot uses is appropriate.

To obtain five stars a product should be virtually perfect and a 'must buy' for every flight sim enthusiast. Four stars go to a product that is outstanding, but may have minor flaws or occupy a niche in the market that would not appeal to everyone – a 'should buy', rather than a 'must buy'. Three stars are awarded to products that may have a more significant (but not function-threatening) flaw or be of a very specialist nature, but overall a very worthwhile purchase – 'would buy' might be a good description. We felt that Ultimate Airlines fell into this category as it is a pretty specialised product. A major feature (one could almost say the sole feature) of its marketing was that it offered 'over 250,000 flight plans' and we found some fault with this aspect. Two stars is reserved for products that represent poor value for money, or that are likely to be of extremely limited appeal – perhaps defined as 'worth a look'. Any product achieving a score of one star is not likely to appear in PC Pilot. We should add that we broadly divide software products into categories of 'combat' or 'non combat' and a 'must buy' is obviously only going to be a 'must' if it falls into your particular category.

Unlike many online reviews, we don't score everything in marginal increments over 80% so as not to upset publishers and we prefer clear distinctions for our readers to understand.

What is the difference, for example, between an 81% product and an 88% product? Don't make the mistake of equating a 4/5 PC Pilot review with a mainstream '80%' score. We have five clear grades, as we outlined above, and we don't dilute their effectiveness by using scores like 4.5/5. From PC Pilot's perspective, 3/5 is a good score for a specialised product like Ultimate Airlines and unfortunately limitations of space will often preclude us from covering every single feature of a complex program. We hope this explains our position, but we would be happy to hear readers' observations on reviews or scoring in general.

FROM: Malcolm Osborn

I decided I would try one of the WAS/Papa Tango products – and as I had read your review of Gary Summons UK2000 I finally settled on that. I bought it with some trepidation, as I once bought Papa Tango's Lauda Airlines, which I found to be 'total pants' and returned it to my local retailer. The UK2000 box contains some good Aerad charts for the 11 airfield add-ons - but that is all there is - just 11 airfields plus charts for £24.99. The installation was straightforward as far as I am concerned, but I often download and install all sorts of add-ons for FS2000/CFS1&2. However, there are no instructions for making the scenery work anywhere in the so-called manual. Anyone buying this who is a first timer will become very confused. There is no help line (typical Papa Tango) just an opportunity to fax or e-mail. Last year they took 5 weeks to reply to my query about Lauda in FS2000 - and then didn't answer it correctly! I can buy all of Gary Summons airfields for £30.00 as per your article, or just 11 of them (albeit the biggest) for £24.99 with some Aerads. Caveat Emptor (or something like that) - my copy will be going back to the retailer tomorrow. Does that sound mean??? Am I being unreasonable baulking at approx £2.00 per airfield add-on? I look forward to reading your reviewers comments in some future issue.

We reply:

We've had a number of less than complimentary mails about WAS products and you can read our review of two of them elsewhere in this issue. The main gripe seems to be that they are fine technically, but low on support or value. However, many of these products will soon become available at greatly reduced prices following Just Flight's acquisition of the Phoenix back catalogue (see our 'News' section for more details). Caveat emptor is definitely recommended, or as WAS are probably saying (in Latin): "infamy, infamy, they've all got it in for me!"

FROM: John Maclean

I am after a British Aerospace ATP 72 for FS2000 Pro. I have searched high and low and am totally unable to locate one. Please could you help me?

We reply:

If anyone can help John find the plane of his dreams, let us know and we'll pass on the details.

FROM: Eytan Ornstein

In the last IFR tutorial, Bill Stack showed us how to handle a back course approach. My question is this: how do we know which end of the runway requires a regular approach and which end a BC approach? In FS2000 the map view will often show two similar ILS frequencies for the same runway. I often wonder which is the BC. My guess is that the second frequency corresponds to the BC approach. In the real world, does the Jeppesen approach plate indicate the BC?

Bill Stack replies:

The instrument approach chart indicates whether the procedure is a back course. In this case, the chart states "LOC (BACK CRS) Rwy 23" on the title at the top right corner, shows the localiser symbol for runway 23, and states "LOC DME (BACK CRS)" atop the localizer identification box in the plan view. The map feature in Flight Simulator 2000 shows the localiser symbol for runway 5, which is the front course. Its only reference to the back course is through the symbol in the approach area for runway 23. When the mouse is clicked on this symbol, a window appears revealing this symbol as a 'back course marker'. This lack of specificity in FS2000 is one reason that using real charts is so beneficial.

NEWS

SOCAL 2001

We gave SOCAL 2001 a brief mention in the last issue and now they've announced that the Southern California social gathering of flight simulator enthusiasts is set for July 20th to 22nd in Palm Springs. This will be a SATCO sanctioned event, however anyone interested in flight simulation is welcome to attend. Sponsors, include SimFlight Network, Clearance Unlimited, Lago and of course, PC Pilot magazine. The HQ for this event will be the Hilton Palm Springs Resort. Registration is required and may be completed online on the SOCAL 2001 website at *www.ldwilliams.org/socal2001*, which you can visit for SOCAL 2001 information and updates.

AirPhoto Website

Leslie Jarret has announced the official launch of his Air Photo website at
www.lesjar.co.uk/airphoto
His mission is to have at least one digital photograph on-line for every airline that has a scheduled service into and out of London Heathrow.

It's Showtime!

Tony Volante of the UK Flight Sim User Group has sent us details of their forthcoming Bristol FSUG Open Day and Flight Sim show to be held on Sunday the 3rd of June in the Wessex Flying Club at Bristol Airport, Lulsgate (follow the signs for 'Freight'). Entrance is free and as the lounge is right alongside the main runway, it's a very good location for aero-spotting and photography.
Further details from Bob Sidwick of R C Simulations – *www.rcsimulations.com*
Tel: 0117 971 5000.

Simmers go Dutch

If you fancy hopping over to Holland on the 28th and 29th April, you need to check out the Aviodome Museum at Schipol Airport, Amsterdam. It's the venue for an annual FS weekend and as well as the DFSO, we should also be putting in an appearance to man a PC Pilot stand. For more details see the DFSO site – *www.dfso.nl*

STOP PRESS - SEATTLE ANNOUNCES SAME NAME BUT NEW NUMBER!

Microsoft have finally announced details of the next update to Flight Simulator and in a shock reversal of current trends it's going to be called Flight Simulator 2002. In a recent press release we were tantalised with some of the new features that will be included when the latest version of the best-selling flight sim is released this autumn. The ones that they're shouting about the loudest are interactive ATC (air traffic control), auto-generated scenery, some challenging new aircraft (including a floatplane) and new visual enhancements. We also noticed that the word 'Professional' was tucked into the title, which probably indicates there will be two versions, as with the current release.

Looking at the enhancements in greater detail, the package promises realistic, interactive air traffic control. Using pop-up menus and key commands, pilots will ask for permission to taxi, take off and land, request enroute clearances and vectors for instrument approaches, while ATC will respond with verbal instructions. We weren't sure about 'auto generated scenery', but apparently, when flying above cities, towns, farmland and other landscapes, Flight Simulator 2002 will automatically add buildings and vegetation appropriate to the terrain below. While these auto-generated 3D objects fill in the details, a new artificial intelligence system will generate air traffic around and between airports.

The new aircraft in Flight Simulator 2002 are going to include improved visual details with subtle shading and lighting effects. Many of the special effects from Combat Flight Simulator 2 are to be included in Flight Simulator 2002, such as contrails from high-altitude jets and puffs of smoke from tyres at touchdown.

We're told that the new aircraft types will be ones that "users have requested most", which probably means those that are most popular as add-ons. So far, they're promising a 747-400, a Cessna Caravan (on floats) and a Cessna 172S Skyhawk.

Another response to the popularity of expansions for Fight Simulator will be enhanced virtual cockpits, viewable in 3D and with working instruments. There will also be a flight analysis option to enable pilots to check how well they maintained their course, altitude and speed. However, the add-on developers are not completely out in the cold, as Microsoft will be including a 3D modelling tool to enable developers to create their own scenery objects and an improved Flight Dynamics Editor to make it easier to create and modify aircraft.

The big question many of us will ask is "what do I need to run it?" Unfortunately there are no details as yet, but tentatively reading the promised feature-list would suggest a 1GHz machine to be a useful starting point. The biggest criticism of Flight Simulator 2000 is that it is too processor-hungry for many users, so let's hope Microsoft have heeded the comments of their loyal following.

All in all, it looks like there will be quite a lot on offer for flight simmers this autumn and so much for all the hysteria about it only coming out on X-Box. We raised a cynical eyebrow about this back in Issue 6, because putting a popular PC offering like Flight Simulator solely onto X-Box makes about as much economic sense as releasing the next version of Word or Excel only on console. However, that's not to say that Bill doesn't have an X-Box version of Flight Simulator hidden up his corporate sleeve, but for the moment it looks like business as usual from Seattle.

WHERE LITIGATION ENDS AND REALITY BEGINS

Just Flight recently announced that it has acquired exclusive worldwide rights to the extensive back-catalogue of acclaimed flight simulation developer, Phoenix Simulation Software.

Just Flight claim that Phoenix terminated their agreement with former publishers Papa Tango following a number of material breaches by that company. Phoenix has also recently taken action to stop unknown publisher, World Air Simulations, from publishing a number of titles incorporating Phoenix software, without its authority. These products have been distributed by Koch Distribution to a limited number of retailers.

The World Air Simulation titles that contain software developed by Phoenix and now owned by Just Flight include: Executive, EWR – Nimrod & Shackleton, E-3 Sentry, Beechcraft, British Airways 757 and American Airlines 757. Two of these are reviewed in this issue of PC Pilot.

Just Flight have stepped in to work with Phoenix to release their titles at an aggressive £9.99 retail price point in DVD-style packaging. This compares very favourably to the current retail price of £24.99 of the World Air Simulations products.

As Just Flight Managing Director, Mungo Amyatt-Leir, explains, "we publish both of Phoenix's recent releases, the highly rated 777-200 Professional and soon to be released 747-400 Professional. Working with Phoenix will now provide flight simmers the world over with the opportunity to experience their excellent Flight Simulator 2000 expansions at a bargain price."

Just Flight has retained leading IP lawyers Bird & Bird to protect its rights and is hoping to work co-operatively with retailers and distributors worldwide to ensure that only properly licensed products are now sold.

The value-priced Phoenix titles should be available in a matter of weeks, Just Flight claim.

The titles are: Executive Jet, Phoenix 757, Phoenix Bonanza and Guardians of the Sky.

Details of Phoenix's 747-400 Professional in special boxed edition with VHS video can be found at Just Flight's site www.justflight.com and the company promises to have infromation on the new releases soon.

Mungo Amyatt-Leir of Just Flight – it always takes two to Tango!

PATCHWORK FORTRESS

The first patch (1.10) for B17 is available at *www.b17flyingfortress.com* and we'll include it on a future CD when space permits. The patch solves game crashes for some and advances game play significantly. Graphical fixes and improvements include mission markings that now appear on the nose of the Fortress with every mission you fly where you actually drop on a target. The missing gunsight in the P38 has appeared, and flames and explosions no longer cause the game to slow down. Panning views are generally smoother and switching between stations is much faster.

AI (artificial intelligence) improvements include greater skill for Luftwaffe pilots. Furthermore, experiencing engine failure has become a much more intense event. Pilots will now feather props! Sound balance has been improved to make crew speech easier to hear. Pilots can now use the engine fire extinguisher system, meaning fewer Forts exploding and more surviving. Carb heat and oil pressure gauges are now working and ATC has improved.

On the whole the first patch is welcome, and we have reason to hope that the second patch will further improve this excellent simulation. We haven't checked if links to certain 'adult' websites contained in the code of B17 (don't bother looking, it was a hacker who found them) have been removed, but rumours of a free left-handed mouse with every patch have been strongly denied!

MAY THE GEFORCE 3 BE WITH YOU!

Nvidia has officially announced the GeForce 3, closely tied to Microsoft's most recent DirectX graphics API, DX 8.0. With more transistors than the Pentium IV, the GeForce 3 is described as the most powerful consumer gaming hardware ever. GF3 is revolutionary in that it is capable of executing programmable instructions, just like the CPU. New performance features include programmable vertex and pixel processing language, enabling developers to write custom shaders for animations, lighting models and general environment mapping. Multisampling rendering support enables full-scene anti-aliasing and multisampling effects, such as motion blur and depth-of-field blur. Real time effects will finally rival movie quality, they say Programs that fully support these new features will take some time to arrive. GF3 boards will contain 64MB of memory or more, and will be appearing soon under various brand names for around £300-£400.

ATC Simulator

PC Aviator has finally released its highly anticipated air traffic control simulator, titled ATC Simulator. It's described as a unique and highly authentic simulation that puts the user in front of the radar scope as an Air Traffic Controller, safely guiding and controlling arrivals and departures into over 48 TRACON (Terminal Radar Approach Control) facilities in the USA. Developed by Aerosoft (USA) more information is available at the ATC Simulator website at *www.atcsimulator.com* and the UK distributor will be Virtual Reality (*www.virtualrealityuk.com*).

RC Simulations

Bob Sidwick of RC Simulations, (purveyors of bespoke flight sim products to the great and the good!) has told us that he has moved to bigger premises. He's still close to Bristol Airport and RC can now be found at "The Hangar", Unit 6, 306 Industrial Estate, 242-244 Broomhill Road, Brislington, Bristol, BS4 5RG. Their new telephone number is: 0117 971 5000.

On the Air

If reading all about flight sims isn't enough and you want to hear about them as well, then *www.fsairwaves.net* is the place to go. Richard Kerby broadcasts a regular radio show over the net and the next one is scheduled for mid-April.

Easy Money?

Do you have a flight sim related website? Maybe it's a VA, an online squadron or an information resource for simmers. Whatever you've got, you might fancy earning some commission by becoming a PC Pilot Affiliate. The scheme is simplicity itself. You post our banner and links on your site, then anyone who visits www.pcpilot.net via your unique URL is tracked on our site. If they take out a subscription we will pay you up to 10% commission. No quibbles, no catches and we pay in hard cash (well, cheques, actually). For more details send us a mail to websites@pcpilot.net.

You Lucky People

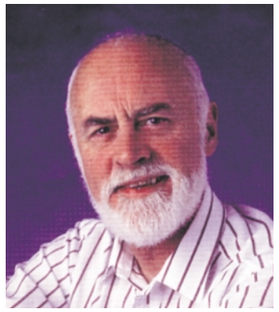
Well done to the winners of our Max Flight competition. J. Firth, J. Turner, C. Capper, M. Lucas, S. Hartshorn, T. Bennett, F. Spijker, L. White, S. Ferris and I. Newton should all have their Maximum Flight compendiums by now.

Flanker 2.5 is a free add-on for Flanker 2.0, introducing a new flyable aircraft (the MiG-29K), as well as moving naval units and air-to-air refuelling. Updated graphics make use of the newest generation of video cards, and many small enhancements increase immersion. Cockpit detail is improved and so are aircraft externals. Effects are also improved, most noticeably with explosions and smoke. Clouds are as excellent as ever.

Wingman control capability is greatly improved, adding new tactical dimensions to the game. With the addition of team attack AI, you will need new tactics to survive.

Naval units move and engage one another. The mission builder is expanded to enable the player to set naval waypoints. Landing on a moving carrier is a new experience in Flanker. There may be no real need for them, but even drop tanks are now available in the ordnance screen. The free update will be an 80Mb download from *www.flanker2.com*, and SSI also plan a re-release of Flanker 2 which will include the free update.

OUR COVER



If you like the cover on this issue of PC Pilot, you may be interested to find out where it came from. It was painted in 1998 by the renowned aviation artist Wilfred Hardy G.Av.A, to commemorate the RAF's 80th anniversary. Wilf, a full member of the Guild of Aviation Artists, paints and designs for many different media. He is equally at home with accurate, dramatic paintings for boardrooms and air forces or air show posters, prints, cards and video sleeves. His collectors plate series 'The Dambusters' is one of the all-time best sellers in its field. Much of Wilf's work can be seen on gifts from The RAF Benevolent Fund - see *www.rafbfe.co.uk* to obtain a catalogue.

ISSUES 1, 2 AND 3 ON CD

Many readers have been disappointed to learn that the first three issues of PC Pilot are now sold out and they will be unable to complete their library of the world's favourite flight simulation magazine. Also, lots of you are following Bill Stack's excellent tutorials and wanted to complete the first lessons. Fortunately, a solution to these problems has arrived in the form of the PC Pilot 1, 2, 3 CD. This professionally produced CD-ROM contains the first three complete issues of PC Pilot as well as one to eight of our popular tutorials that allow you to develop your simulated flying around the British Isles. They begin with a simple circuit at London City Airport and culminate in a long flight across the sea from London Heathrow to Cork. The CD is great value from £7.99 including postage (more details on our subscriptions page). If you've already bought photocopies of tutorials and now want the CD, drop us a mail to ondisc@pcpilot.net for details of a special discount.

ROYAL PHOTOGRAPHERS

The Royal Aero Club Trust has just announced the results of its New Millenium Photographic Competition. The theme was The Exhilaration of Flight and a distinguished panel of judges chaired by HRH The Duke of York awarded prizes to the thirteen lucky winners.

Overall first prize in the Adult Section (referring to the age of the entrant, not the subject material!) went to Miles McCallam for his picture 'Cyril's Luscombe'. Winner of the Junior Section was Andrew Holmes (aged 15) for 'The Rare Red Squirrel' and the first prize in the Electronic Section went to Alex Mitchell of New Zealand for 'Spitfire and Hurricane on Takeoff'. Alex was the lucky recipient of a year's subscription to PC Pilot and a huge selection of flight simulation software that we've reviewed over the last year. Well done to all the winners and don't forget that there'll be another competition this summer – details from *www.royalaeroclubtrust.org* Who knows, first prize might be for a screenshot this year!

Cyril's Luscombe

The Rare Red Squirrel

Spitfire and Hurricane on Take Off

WIN YOUR VERY OWN AIRCRAFT!

Be the first in your street to own the fabulous new Eurofighter Typhoon. While everyone else is washing the family car on a Sunday morning, you could be outside getting admiring glances as you show off the very latest in swing-role aircraft. Whether you are an international superpower or just a fan of flying, the latest offering from NETMA (Nato Eurofighter and Tornado Management Agency) will be the pride of your air force. This superb machine comes with a complete array of the latest weaponry and also a useful display stand for mounting it on your desk. Yes, unfortunately it's a non-flying model, but a pretty fabulous example and we've got one to give away courtesy of those very nice people at Rage Games. It really is a superb piece of kit and we've also got some rather nice runner-up prizes of Eurofighter goodies.

How to enter:

All you have to do is correctly answer the following questions:

1. The Eurofighter is not the first aircraft to carry the name 'Typhoon'. Who manufactured the original Typhoon, famous for its role in ground attack sorties?

a) Supermarine

b) Hawker

c) Austin-Morris

2. Four European countries are involved in the Eurofighter project. As well as Great Britain, who are the other three?

a) Germany, Italy and France

b) Germany, Italy and Spain

c) Luxembourg, Switzerland and Belgium

The competition is open to PC Pilot readers from anywhere in the world with the exception of PC Pilot layout staff (and their friends, their friends' wives, their friends wives' tennis partners, etc.)

You can send your answers by e-mail to comps@pcpilot.net or on a postcard/back of an envelope to:

Eurofighter Competition
PC Pilot
PO Box 11
St. Ives
PE27 3GW
United Kingdom

Please make sure you clearly state your full name, address and e-mail address (if you have one). The competition closes on 1st June 2001. Entries received after that date cannot be included. Prizes will be drawn at random from correct answers.

Fly Through Wire!

With so much talk about the future of leisure software being online, we thought we'd talk to someone in the trade to see what is actually being done out there. You'll see in the news feature elsewhere in this issue, that there is a flurry of activity with online combat. Andy Moon is the Flight Simulator Community Leader on the MSN Zone. Having worked with Flight Simulator on the Internet for over three years, and with Flight Simulator itself for seven years, Andy continues to be involved in lots of interesting projects, one of which promises to dramatically change the world of flight simulation and General Aviation. In his free time (which it doesn't sound like he has much of!), Andy writes reviews for www.avsim.com. We asked him if online participation is relevant to Flight Simulator users – it may be okay for a dogfight, but is there any point taking off 'online' from Meigs in our Cessna?

Andy Moon

The multiplayer aspect of flight simulator is growing day by day and as more users connect to the Internet, they find the experience one that is out of this universe. No longer do you have to fly on your own, you can now share your fun with fellow flight simmers and pilots from all over the world!

When I use Flight Simulator, I am always connected to the Internet. Why, you ask? Please allow me to show you.

The skies above us are getting busier everyday with commercial, military, corporate and private traffic, which poses a threat to the safety of aircraft. When you fly, you must always keep a good look out for other aircraft in the vicinity and take avoiding action where necessary. With the multiplayer function of Flight Simulator, you can fly in crowded skies with other aircraft and simulate circumstances you can't do offline.

You should fly online to experience lots of the extras that come with Flight Simulator and to explore the fast growing 'online' Flight Simulator community. The multiplayer features add to the realism when you fly online. Fancy flying from LHR to JFK using the actual live weather as it is in real life? Well, you can quite easily using Flight Simulator 2000 and the Internet.

Microsoft must be careful about competitors such as Fly! stealing the multiplayer market

I believe that the Internet has changed the specification of most simulation products ever since the launch of Flight Simulator 98 in the fall of 1997. Microsoft did not really look at the aspect of multiplayer in Flight Simulator 98 or Flight Simulator 2000, however, with the amount of interest involved with multiplayer, the team will hopefully be looking at this aspect in the next flight simulator, as there is a target audience out there. One thing Microsoft must be careful about are competitors such as Fly! stealing the multiplayer market.

For those new to multiplayer, the MSN Internet Gaming Zone (www.zone.com) is the ideal place to find fellow pilots to fly with over the net. The Flight Simulator gaming rooms average 90 flyers at peak times and the Combat Flight Simulator rooms average about 400. To fly on The Zone is completely free and a great experience to start your multiplayer action. After you meet friends on The Zone, you can move on to take part in private IP flights, which are much faster and more reliable.

There is so much to explore, I could go on forever with information and sites to check out. If you progress with multiplayer, you will no doubt check out Voice Communication such as Roger Wilco (www.rogerwilco.com) or the Sidewinder Game Voice (a personal favourite). You might also investigate Air Traffic Control software such as SATCO (www.satco.org) or even download your favourite aircraft and panel for free.

For those wannabe pilots out there, you also have the chance to join and fly with 'virtual' airlines. There's always a featured airline in PC Pilot and a huge list of VAs web addresses. Virtual Airlines have their 'offices' based on a web page. They are run like a small airline and usually offer various departments and employment opportunities to reflect reality

Flying online is rapidly progressing and in the future, multiplayer will be a key highlight in almost all flight simulations on the market. The majority of people will not want to fly on their own, but in crowded skies. If companies such as Microsoft don't make their move, I feel that there is a strong market for freelancers to produce software that beats the simple function in current simulators. If you look at how much Flight Simulator has progressed over the last 10 years, think what it will be like in the year 2010.

If virtual reality sets are part of the standard specification for most personal computers, flight simulator and multiplayer will be absolutely untrue (I'm going to let you think about that one!). One thing that is limited at the moment, is the number of users per game or IP. On The Zone, gaming rooms hold a maximum of 8 or 16 players and over IP you can hold a steady connection of around 12 people. I would like to see arenas that you can join where there are hundreds of users flying all over a given area such as the United Kingdom. Maybe this is something that might be included in future flight simulators? As we say, the more, the merrier!

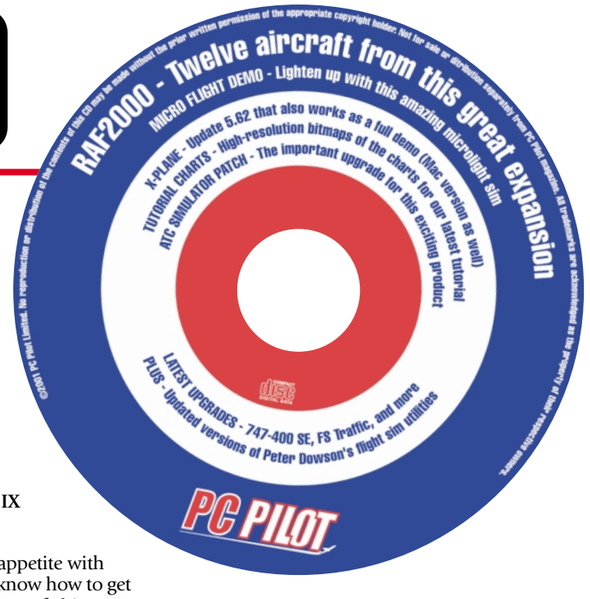
In a few years time, nearly all flight simulator users will be connected to the net somehow. Now is an excellent time to get involved and be a part of many growing communities and ideas that are being developed, so get online and explore! ■

Andy Moon

Andy can be contacted by e-mail at andy@flightadventures.com

You are never alone, when you're on The Zone!

ON THE CD


RAF2000 - Twelve aircraft from this great expansion
MICRO FLIGHT DEMO - Lighten up with this amazing microlight Sim
X-PLANE - Update 5.62 that also works as a full demo (Mac version as well)
TUTORIAL CHARTS - High-resolution bitmaps of the charts for our latest tutorial
ATC SIMULATOR PATCH - The important upgrade for this exciting product
LATEST UPGRADES - 747-400 SE, FS Traffic, and more
PLUS - Updated versions of Peter Dowson's flight sim utilities
PC PILOT

BRIBERY AND CORRUPTION!

As a blatant bribe and to curry favour with our loyal readers, over the next two issues we're giving away a complete version of RAF 2000 from Just Flight, the best selling aircraft add-on that includes everything from biplanes to jets. On our cover CD you'll find 12 out of the 25 great aircraft that come with this collection of the RAF's finest. They are all available fully optimised for Flight Simulator 98, 2000 or Combat Flight Simulator. When he reviewed RAF 2000 last year, Kenji Takeda described it as "an eclectic, yet balanced mix of aircraft" and recommended it as a 'first' aircraft collection.

Due to considerations of space, we couldn't fit the whole collection on this CD and we had a tough job selecting 12 aircraft for you to sample. However, we think there's a great range here that will keep you busy, at least until Issue 11 is out. Join the boys in blue and fly this delectable dozen:

Avro Shackleton
Avro Tutor
BAe Hawk
BAe Nimrod
Boeing Chinook
Bristol Beaufighter
De Havilland Mosquito
Eurofighter EF2000
Hawker Fury
Hunting Jet Provost
Supermarine Spitfire Mk IX
Westland Lysander

Once you've whetted your appetite with this brunch, you'll want to know how to get the dinner*. On the bottom of this page you'll see an RAF 2000 Token. Cut this out and keep it safe (it must be the original, not a photocopy). Then, in the next issue, out on 15th June, we'll be supplying a second token as well as details of how to redeem both tokens for a complete packaged version of RAF 2000. This free offer is not restricted to UK readers and anyone with both tokens is eligible.

INSTALLATION

Close all open programs and applications prior to installation. Place the PC Pilot CD in your CD-ROM drive. If Autorun is enabled, the program will start and you will see the opening screen and menu buttons. If you do not have Autorun activated (or the CD does not start automatically) you should insert the CD in your CD-ROM drive, press the 'Start' button on the Windows taskbar, move up to 'Run…' and left click on it. Type in the 'Open' window: D:/menu10 (where 'D' is the drive letter of your CD-ROM drive), then press 'OK'. The CD will then start to run.

One you see the opening screen you can choose a menu to enter by simply clicking on the small button on the left of the menu bar. We strongly recommend you read the RAF 2000 manual first and for this you will need Acrobat Reader installed. If you do not have Acrobat, go into the 'Utilities' menu, double-click on the Acrobat icon and follow the instructions.

When installing RAF 2000, make sure you select the correct target system, i.e. Flight Simulator 98, 2000 or Combat Flight Simulator and if you want to use it in more than one of these programs, you will need to install one version at a time.

To access the high-resolution charts you'll need to 'explore' the CD, so see the special instructions on the next page.

*PC Pilot's handy 'Random Metaphor Generation Freeware' will soon be available for personal use on a future CD. Never be stuck for a cliché again!

Westland Lysander

BAe Nimrod

De Havilland Mosquito

BAe Hawk

PC PILOT RAF 2000 TOKEN 1

Keep this safe until the next issue to obtain complete version

AND THERE'S MORE...

UPGRADES AND PATCHES

Save your phone bill from a fate worse than death, with the latest patches for all this popular flight sim software.

747-400 SE Upgrade - the recent upgrade from Flight One for this brilliant Jumbo.

FS Traffic Patch - upgrades this really popular utility to the latest version.

X-Plane 5.62 – the full update for Windows and a mini version for the Mac – the update also works as a demo of this amazing flight sim.

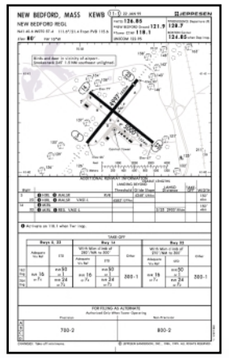
ATC Simulator Patch – the handy one that corrects installation problems. This long-promised package is only just out and we'll be reviewing it in a future issue.

Plus, all the main patches for Flight Simulator 2000, Fly! and Flanker 2.0.

TUTORIAL CHARTS

When we included the high resolution Jeppesen charts for our tutorial on the CD with Issue 9, it proved very popular, so we're continuing in this issue. In the folder marked 'Tutorial Charts 10' you'll find the current Jeppesen charts for our latest tutorial as high-resolution .bmp files. You can open them in Windows Paint or Paintshop Pro (which was included on our previous CD). We've also embedded them in a Word document using a similar style to previous tutorials so you can print them out in the same layout if you want.

In order to open the tuturoial charts, go in to 'My Computer' on your PC and right click on the PC Pilot CD icon. Select 'Explore' and you'll see all the folders that are on the CD. Open the Tutorial Charts 10 folder, double click on the images or the Word files and they should open in your browser or Word.



New Bedford Airport.bmp

Hartford Airport.bmp

Hartford LDA.bmp

MICRO FLIGHT DEMO

We've got a great demo of Micro Flight from Ilan Papiny – the brains behind the unique Hangsim. This little demo is a complete flight sim and as we gave the original Hangsim 4/5 when we reviewed it, this should be a treat. It lets you get to grips with lighter than normal machines and if you like the look of it there are details of how to purchase the full version from www.hangsim.com. Unlike most demos from other publishers, Ilan has actually provided a patch to cure one or two minor bugs and we've included this in the folder as well.

UTILITIES

Adobe Acrobat If you haven't got Acrobat Reader, you'll need to install it from this folder in order to read or print out the RAF 2000 Manual.

Winzip 8.0 The latest version of the world's most useful utility. You'll need this installed before you can open any of the zip files on the CD. Please note that this is shareware and you should register and pay if you want to use it on a regular basis.

Peter Dowson's Utilities We've got all the latest versions of Peter Dowson's brilliant freeware utilities. You'll find FStar RC 1.60, FSUIPC 2.30 and WideFS 4.30 (including versions for FS98).

IMPORTANT - TECHNICAL SUPPORT

The CD and software on it is free and as such, PC Pilot, Just Flight nor any of the publishers or developers of the software supplied on the CD can provide technical support. The software is supplied very much 'as is' and without support. Enjoy the CD and the software on it!

We have seen the future...

Simulations in Development

Anyone reading the leisure software industry press or casting a glance over the flight sim websites would be forgiven for thinking that 'flight sim games' (as they're termed by the trade) are likely to completely disappear as a genre. There have been many new releases of combat sims in recent months, including Combat Flight Simulator 2, Battle of Britain and B17. However, with the exception of Eurofighter from Rage, there is very little else planned for the future and it is certain that the days of large development budgets for flight sims are over.

But... all is not lost, and as well as freeware and commercial companies producing plenty of add-ons and expansions for the major simulators, there is also a growing band of independent developers designing their own standalones.

You may be forgiven for thinking that any flight sim developed without a few million pounds and a team of programmers based in the north west of the USA, will probably resemble a mobile spreadsheet. However, modern technology has put high quality graphics within reach of much more modest budgets and if you don't believe us, take a look at X-Plane.

In a future issue we'll be seeing what's involved in creating a flight simulator program, but here are three examples of simulators that have got well beyond the 'good idea down the pub' stage of development.

Targetware – Target Korea

Despite the well-publicised demise of barrysworld.com (an online games portal), there's no doubt that online gaming is going to have a huge impact on leisure software in the next few years. Targetware are one group who have followed the online route and are set to release a series (yes, a series) of online flight sims using a physics engine called 'Sickware', designed to operate on both Windows and Macintosh operating systems. We would strongly suggest a change of name from Sickware, before the Daily Mail gets wind of it and the 'BAN THESE SICK GAMES' headlines start appearing!

Sylvan Clebsch, the CEO of the operation, may be familiar to flight sim enthusiasts as the brains behind Roger Wilco, the online voice application. His plan is that Targetware will produce the basic flight model, aircraft and scenery, then leave it to the online community they attract to further develop new aircraft, scenery and missions. This formula has worked well for Combat Flight Simulator and European Air War, even without any encouragement from the companies behind the host programs.

From the outset, Targetware has been designed to support a multiplayer environment of 250 players or more. Anything intended for use in the Targetware environment will have to be submitted to the developers, validated and certificated before it can be used in the program. These officially sanctioned (and digitally signed) planes can then be used on Targetware corporate servers, or on players' servers worldwide. Players are also able to certify (and digitally sign) their own personally designed aircraft, 3D models and terrains for use on their servers and to share with others. At the same time, other players have the power to accept or reject these modifications and maintain control over the environment they are providing.

Sickware will continue to provide function and feature enhancements to the core engine, as well as new aircraft, terrains and other resources. However, the majority of new planes, flight models, cockpits, terrains, ground objects and personalised skins will be designed by the community at large.

The first of the series will be titled Target Korea and will feature the Mig 15 versus the F86 Sabre. Target Korea is currently undergoing closed beta testing and is expected to be simultaneously available in open beta for both Windows and Macintosh systems in the near future. You can keep track of their progress at www.targetware.net.

Target for Tonight

In case you didn't know, this next 'independent simulator' takes its name from a classic film made by The Crown Film Unit in 1941. Released during the Blitz, it told the story of an RAF bombing raid on Germany carried out by a Wellington squadron. It was an important film, in that it showed Britain in the role of attacker, a novel viewpoint at the time for a public more familiar with retreat from Dunkirk and the gallant defence of the Battle of Britain. It also used a fair amount of actual footage and RAF crews to re-create scenes. Armed with this knowledge of its celluloid heritage, you can probably guess that the Target for Tonight simulation is based on the RAF night bombing campaign. Further clues about the content can be gleaned from the name of their website – www.nightbomber.com.

Target for Tonight is envisaged as an online simulation, but is not intended to be a strictly commercial venture. We discussed the whole project with Richard Gall, the lead programmer, who told us that a lack of any commercial publisher behind Target for Tonight is a benefit rather than a hindrance, allowing his team to develop the simulator exactly as they wish and react to input from prospective users. However, they aren't naïve enough to expect it to run on fresh air, and any profit generated from the final version will be donated to aviation related charities. Many of those involved in Target for Tonight are experienced commercial programmers and having seen some of their CVs, it's obvious that this could easily be a team working for a huge multi-national publisher and not the usual motley collection of amateurs making up for a lack of experience with an abundance of enthusiasm.

It may surprise some readers to learn that there is quite a lot of positive interest in the project from Germany. The team have many German contacts assisting with development of the ground defence side of the simulation and a look at the forums on their website shows many budding FW-190 pilots ready to take on the Lancasters, Halifaxes and Stirlings.

Some major development milestones have been reached, with testing proving very successful on engine related features, including the terrain system. They are currently working on developing a system that affects the terrain appropriately. Because the weather is dynamic, regions where it rains will be affected accordingly, with fields and runways become slippery when wet. This makes landing all the more challenging and dangerous, especially if you have taken heavy damage. They also aim to get rid of 'generic terrain' and in Target For Tonight they plan on creating different surfaces, which affect objects differently. For example, if you try and crash land on a rocky stone mountainside, you risk your aircraft being torn apart, whereas, if you land in a field, you have a better chance of survival. The moral of this story is that you will actually have to think about where you put your kite down... the days of just straightening up and ditching anywhere would be over.

All the roles of a bomber crew are envisaged, including bomb-aimers, gunners, wireless operators, navigators and (of course) pilots. Initially, the simulation will be centred on the 'heavies' - Lancasters, Stirlings and Halifaxes, but in time, with extensions, medium/light bombers may also be included. The aircraft they are covering by default will be very detailed in all aspects.

Although a full version is still a fair way off, the good news is that the public will be able to get their hands on it at major stages throughout the development process. Richard explained that this is so people won't have to wait for the product to be completed before trying out what they've done so far. They hope for the first downloads to be available within the next few months. In the meantime, PC Pilot is very privileged to have some renders of the Lancaster model and these are the first shots to appear in public. We will be keeping a close eye on the progress of this novel simulation, but in the meantime, if you want get a pretty authentic picture of Bomber Command at war, we recommend the video of 'Appointment in London', starring Dirk Bogarde.

Wings With Wires

The third in our trio of standalone sims-in-waiting, is Wings with Wires (www.wingswithwires.com), a new company founded in January 2001 and dedicated to early aviation, with a focus on creating the next generation of combat flight simulation products. Currently, they have an early aviation aircraft add-on pack in development for the soon to be released Ripmax R/C Flight Simulator. They are also in the middle of developing an unofficial patch for Activision's Fighter Squadron, designed to fix many on-line bugs. It will also lay the foundations for their new stand-alone WWI combat flight simulator 'Wings with Wires'. They hope this program will redefine the concept of online combat flight sim gaming.

Wings with Wires will be announced officially in early summer, but it has been 'in the works' for over a year. The team behind it have been working very hard to set the stage for the production of a new sim that will utilise the power of the OpenPlane engine created by Inertia Games (developers of Fighter Squadron). By leveraging on the physics engine and open architecture of OpenPlane, the Wings with Wires development team hope to deliver on its ambitious goals in a timely manner.

Wings with Wires will cast the game player as a WWI pilot, immersing him in a persistent on-line sky of danger and opportunity to re-create the same scenarios that compelled pilots to take to the sky during the actual war. The primary goal is to produce a virtual world that will spawn the most realistic WWI aviation scenarios, while striving for total immersion.

We're told that Wings with Wires will be unlike any other combat sim and will focus on flight where others focus on war. The feel of the game will be natural and will have a subtle and impressive role

Bombs Away!

The Lancaster model is impressive enough, but imagine flying it online with a full crew!

Takeoff from Driffield, low over the Frisian Islands and on to Bremen, your target for tonight

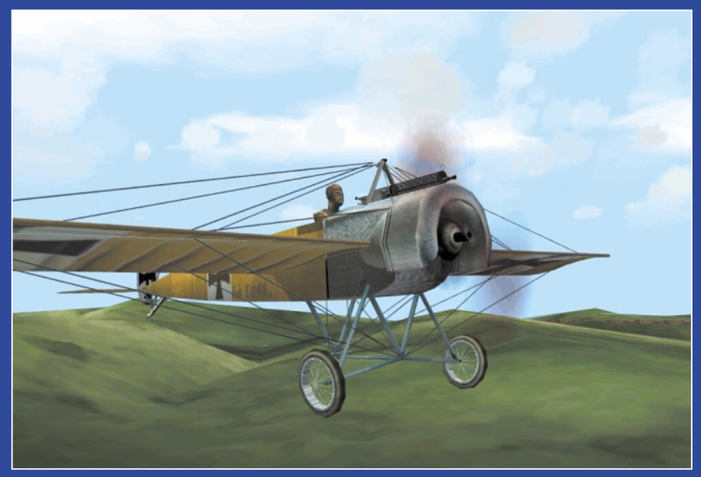
RAF aircrew from 614 Squadron prior to Operation Millenium, May 1942. Their 'Target for Tonight' was Cologne, the first 1,000 bomber raid

Targetware – well on target!

These screen shots from Targetware were snapped in-game and are un-retouched. They were taken on a G4 Macintosh, but as the product is still at the beta stage, the developers tell us that the finished product will be even better

The ultimate virtual SE5a cockpit by Wings with Wires, based on the restoration of a real SE5a aircraft by Memorial Flight

The SE5a is airborne. Wings with Wires plan some novel atmospheric surprises and they will be exploring many new ways to model shadows



Fokker EIII in flight. Note that the rotary engine is a blurred 3D model, not just a flat disc painted silver or grey

playing aspect that will keep up the excitement without relying on the traditional complex dynamic campaign that requires you to read a long manual or dedicate hours of your time whenever you just want to have some thrills.

Technically, the developers say, their aircraft models will break all barriers. Modelling the details of WWI aircraft has long been beyond the ability of game engines designed for WWII aircraft or modern jet fighters. The developers boast that they are pioneering new technology specifically dedicated to more primitive aircraft and it will include the most detailed and accurate WWI cockpits ever seen in a computer simulation! All cockpits will be pan-able 3D, and all crew positions will be fully rendered and able to be manned. All control surfaces move, guns recoil, rotary engines spin and wings will even warp.

The physics engine is the strongest point of the OpenPlane engine and will allow them to model very complex flight models for these aircraft, which were among some of the first to bring man into the air. Already they can model the subtle flying difficulties unique to the old wing-warping systems. The act of flying in itself is promised to be a pure pleasure in Wings with Wires.

Sean Baker of Wings with Wires told us: "It is our opinion the most challenging and important aspect of creating a flight sim is the physics and flight modelling. Because Inertia has truly mastered this art with the OpenPlane engine, we can spend our time making Wings with Wires an incredible flying experience. We are creating new rendering effects that take advantage of all the latest video cards have to offer. We are building a very robust client/server engine, bringing together people all around the world to join the dangerous skies of our persistent battlefield."

Wings with Wires will not utilise an outside publisher to produce or market their simulator. They have chosen to self-publish because they believe they have the tools needed for the task and wanted to maintain complete control over their vision. There is a large amount of Internet and e-commerce experience within the Wings with Wires team and they expect the web will be their primary distribution tool. Most members of the team have full time jobs apart from Wings with Wires, but in common with the other sims in this feature, they treat it very much as an additional occupation.

Wings with Wires will also be producing and selling early aviation products from their site. Revenues from this business will help fund development of the simulator as well as increase exposure. Among their partners is Memorial Flight (www.memorial-flight.com) of France, who spend their time restoring, building, and flying early aircraft. Wings with Wires hope that this relationship will help them achieve the level of realism that they want in their aircraft and flight models. If the images we've seen so far are anything to go by, this should be a benchmark for WWI simulations. ■

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Show-room/shop/training center open from Tuesday to Friday (2-6 pm GMT+1) and Saturday (10 am- 1pm and 2-5 pm GMT+1)

Flight Simulator Add-ons

Mexico Pro vol.2 (FlyMex)
Now covering North of Mexico. The totally new Mexico Gold PRO Vol II includes scenery, aircraft, approach charts, as well as new adventures and challenges inside the mexican airspace.
£27.50 = €44,37

Switzerland 2 (Flight&Cockpit)
Fly the first time with your Flight Simulator over the Swiss mountains and enjoy the beautiful sightseeing.
£28.99 = €46,85

Ultimate Airlines (Just Flight)
Fly ANY scheduled airline flight from ANY airport in the world in Flight Simulator. Proflight compatible.
£22.95 = €36,94

Polynesia 2000 (Flight World)
Welcome to French Polynesia, a world of fantastic atolls and islands! Take your seat in the aircraft of your choice and travel this beautiful region.
£26.95 = €43,38

LAUNCH OFFER
767 Pilot In Command (Wilco Publishing)
767 Pilot in Command gives desktop pilots a series of nerve-wracking lessons in the art of managing aircraft problems ranging from tire blow-outs, Slocked gears and windshear to electrical failure, cabin depressurization and engine trouble.
Launch Offer :
£22.95=€36,94

Corporate Pilot (Abacus)
Corporate Pilot puts you into the left hand seat of the speediest, most luxurious and sexiest planes alive. Your job is to chauffeur the cream of the crop in this expensive fleet of personalized aircraft.
£27.50 = €44,37

Airport 2000 Vol.1&2 Bundle	£28.99 = €46,85	B747-200 (AETI)	£22.95 = €36,94
FS Design Studio Pro	£44.50 = €71,64	Proflight 2000	£28.99 = €46,85
FS Clouds 2000	£22.95 = €36,94	English Airports	£19.50 = €30,99

and much more at www.simw.com

Airport 2000 Vol. 3
Special launch offer : £22.95 = €36,94

FLY !

FLY 2K! (Terminal Reality)
Specially enhanced version of the 1999 flight sim of the year. Includes SKY! Environment, new C172 IFR panel, expanded global elevation database,...
£33.95 = €54,29

Rhein-Ruhr (Aerosoft)
Visit the Rhein-Ruhr area the most populated area of Germany. The scenery covers more the 10000 sq km with 19 airports and airfields with all the buildings, the airport facilities, the runways and taxiways and static objects.
£19.50 = €43,38

Also available for Fly ! : Wilco's 737-500 £22.95 = €36,94

Military Simulators

Battle of Britain (Rowan Software)
The Luftwaffe launched raids with around 1000 aircraft. About a third would be bombers and the rest fighters. On good days the RAF would be able to respond with a few hundred fighters...
£28.99 = €46,85

Combat Flight Simulator 2 (Microsoft)
As World War II rages across the South Pacific, fly for either the Japanese or United States Navy in more than 100 distinctly different missions with new carrier operations, aircraft, scenery, campaigns and much more.
£27.50 = €44,37

B-17 Flying Fortress II (Microprose)
The complete WWII strategic airwar simulation with 10 roles on board with real time motion captured characters. Breathtaking air combat sequences over the highest resolution terrain ever seen.
£28.99 = €46,85

Tuskegee Fighters (CFS 1)	£27.50= €44,37	Combat Squadron	£23.95 =€38,42
Air Superiority (Jane's)	£41.50= €66,68	F/A 18 (Jane's)	£30.95= €49,33
Naval Warfare (Jane's)	£41.50= €66,68	USAF (Jane's)	£30.95 =€49,33

Civilian Simulators

X-Plane 5.x (Laminar Research)
X-Plane uses blade-element theory to simulate almost any aircraft conceivable... just enter the dimensions of the aircraft that you want to fly and go flying!
£43.95 = €69,16

ATC Simulator (PC Aviator)
Dim the lights.... take a seat..... and prepare to challenge yourself in front of the scope of the most complete and most authentic Air Traffic Control simulator you'll ever experience on your PC.
£44.95 = €74,12

744 PS 1.3 (Aerowinx)
The B747-400 PRECISION SIMULATOR is more than a professional IFR trainer: it's for both - advanced flight sim enthusiasts AND real pilots who want to get familiar with the glass cockpit philosophy.
Version 1.3 :
£167.69 = €270,20
Upgrade
(for version 1.x users) :
£60.00 = €96,68

Available in Elite v6 Single, Twin, Jet
Free price list available on request or on SimWare Simulations website.

Flight Controls

F-16 Fighter Stick & Pro Throttle (CH Products)
F-16 Fighter Stick & Pro Throttle (CH Products) : The most advanced CH Products' HOTAS system. Fully programmable, it has these lovely features for your gaming pleasure.
F-16 Fighter Stick : £98.50 = €158,40
Pro Throttle : £106.00 = €170,80

ACP (Aerosoft)
More than 50 functions for this compact radio stack. Compatible with FS98/FS2000/Fly/Flight Unlimited 3/ProPilot/Airline Simulator.
£182.99 = €294,99

Jetliner (PFC)
Full size control yoke (cast aluminum) with full movement, 12 fully programmable yoke switches, connection on joystick port.
£705.99 = €1.137,83

CH Flight Sim Yoke (CH Products)
Ergonomic designed yoke movement without a center detent allowing the ultimate in control. Programmable through software.
PC (1 lever) : £102.99 = €165,84
USB LE (1 lever) : £ 107.99 = €173,28
USB (3 levers) : £122.99= €198,07

AFCS (AETI)
Compatible with all simulators, this yoke is probably the most realistic on the market. High quality steel and aluminum construction & components.
£460.00 = €741,20

Jet Studio (Safeline)
This Jet Studio reproduces main controls of a real aircraft. It is the only product that simulates real Jetplanes throttles with revers levers. 6 different consoles are available at different prices.
From £352.50 to £860 (€567,68 - €1385,72)

CH Pedals	£64.50 = €103,87	CH Pro Pedals USB	£116.99 = €188,15
CH Pro Pedals PC	£91.99 = €148,49	Thrustmaster Elite Rudder	£53.99 = €86,51

Special prices for full configurations. Please contact us or check our website !

Accessories

Keyboard Cover (Cockpit Collection)
The Keyboard Cover is a soft elastomer plastic skin that fits over regular shaped keyboards. The skin is printed with highly detailed text and graphics which are fitting exactly above the appropriate keys. Just place it on top of your keyboard and you're ready to play in seconds.
Available for all flight simulators.

SIMCharts (Jeppesen)
Edit and print worldwide charts (14 different areas)
£16.95 = €27.02

Game Commander 2 (Mindmaker)
GC is a voice command input application that takes you to the next level of PC gaming. It saves you from the myriad of awkward keystrokes used in today's sims by assigning voice commands to them. You want your troops to attack? Simply say, "Attack!"
£27.50 = €44,37

Racing Simulations

Colin McRae Rally 2.0 (Codemaster)
The Greatest, The Fastest, The Best one ! Look left then right, DON'T CROSS THE STREET ! Colin McRae Rally 2.0 is coming on your PC.
£28.99 = €46,85

Speedway Racing Wheel
Solid steel construction with a cast aluminum wheel and black leather covering, 340° rotating wheel, Formula 1 type gear lever, easy to fix, game port compatible. The highest quality available !
£140.99 = €226,82

Hard Truck 2	£22.99 = € 36,94	Nascar Heat	£33.95 = €54,29
Mercedes Truck Racing	£28.99 = € 46,85	Grand Prix 3	£28.99 = €46,85

Prices can be modified without prior notice. Prices are VAT included. Artwork by Celicon.

Different ways of payment : credit card, postal order, bank transfer. Shipping within 24-48 Hrs over Europe, according to availability. Shipping prices are calculated according to weight and shipping company : Chronopost or Regular Mail.
Example of shipping costs to UK by Chronopost : 1 item = £6 - 3 item = £7. We offer better rates for more than 2 items shipped in the same time. Do not hesitate to call us. GBP prices are calculated from Euro rate on January 2001.

IL-2 Sturmovik

East meets west prior to détente and missiles

The Ilyushin IL-2 was produced in greater numbers than any Allied aircraft of WWII. Furthermore, the two highest scoring Allied aces were both Russian! It may be this rich heritage that motivates the team of 1C:Maddox Games.

After a dozen hours with an early version of IL-2, we are still awed by the leap in technology. The clouds and contrails are the best we've ever seen. Lighting effects are gorgeous. Attention to detail is obsessive at every level. Touching down on a runway on the right wheel, the burning rubber throws up grey smoke. Moving to full throttle the torque effect causes the plane to gently roll. For the first time anywhere, tracers have their appropriate colour for the respective air forces.

If that weren't enough, the damage and systems models are intricate. Spars jut out from broken wing tips. Bullet holes mar an otherwise clean surface and twisted metal sprouts from a gaping hole.

Speaking of damage, the old 'hit bubble' has gone the way of the Model T Ford. It is fiendishly difficult to get a kill in IL-2, forcing pilots to close to 75 metres and less. Up to now, simulation designers have relied on imaginary surface extension (hit bubbles) to simplify the task for aspiring aces. In IL-2 only what you hit takes damage, and pilots who elect to fly with lower realism will score more damage per hit.

Our 109 circling a substantial airfield

There are other tweaks that add to the value. Hitting 'T' turns on the smoke, for a custom air show! The ability to save any and all missions to virtual tape (track files) on the hard drive results in the joy of later viewing, whether for entertainment or learning value (just how did that bandit get on your tail anyway?).

We spent most of our flight time in the Me109 F2, but the G-2 and G-6 are also modelled, right down to the fine differences in the cockpits (which are excellent). The 109 is a delight to fly, but one must pay attention to proper trim for the best performance. Prop pitch adjustment is also modelled.

The Lavochkin LaGG-3 was something of a surprise, as was the Sturmovik. It is not common knowledge that an IL-2 minus bombs can outclimb and outrun the 109! The LaGG-3 can also out-turn the 109 above 2,500 metres!

The six campaigns are not ready for trials yet, but we can hardly wait. IL-2 will include built in voice communication software and the Yak and Fw190 are promised for post release. Are you ready for the next generation in combat simulation technology? ■

Leonard Hjalmarson

Troops are in and the clouds are something else!

The 109 cockpit in a wide angle view

Winter camouflaged 109 after a belly landing

The 109 with its main guns and under-wing mounts firing

PREVIEW

Publisher:	Blue Byte Software	**Price:**	£29.99
Website:	www.bluebyte.com	**Expected Release Date:**	
Developers:	1C:Maddox Games		May 2001

Eurofighter Typhoon

Sleek and sophisticated, welcome to the 21st Century

Turning on finals

Hopping into the BAe Systems Eurofighter Cockpit Demonstrator at Farnborough 2000 was certainly a highlight for us last year, as we gleefully described back in Issue 7. What a ride! Since then we've also been glued to an early version of Eurofighter Typhoon from Rage Software, formerly DID (Digital Image Design). This promises to be the next big thing in fast jet sims, and the ground crew from Warrington has sent us the latest incarnation of the code, which certainly looks ready for release.

Boy, am I glad these SAS guys are on my side

By working closely with Eurofighter International, DID has managed to recreate the entire fighter experience magnificently. We haven't been able to put this one down, even though the Beta version had some rough edges. The real-time dynamic campaign, in which you take direct command of six pilots, is as fluid as any we've seen. Flicking between cockpits, briefings and planning sessions is done within the 3D interface. Menus slide in from the screen edges so that you don't miss any action, and it all works seamlessly.

What this means is that you can concentrate on one thing - flying. And when you're in the cockpit of the Eurofighter Typhoon that's all you'll want to do. This 21st Century aerial ace is as agile and powerful as any around and the flight modelling here shows this off to perfection. The take-off run is frighteningly short, and pulling into a vertical climb puts you above the clouds in seconds. Zooming between the ice capped mountains of Iceland is exhilarating, and spending a few missions pushing out the flight envelope reveals just how manoeuvrable this beast can be.

Set in 2015 you have a full complement of fire-and-forget weapons, including the ASRAMM and Meteor missiles for

Lock and load, let's get this baby off the ground

despatching aerial threats with ease. The Brimstone, Penguin and ALARM air-to-ground ordnance is devastatingly precise, proving that the Eurofighter is justified in boasting Swing Role capability. The great thing about this modern machinery is that it's so user-friendly, for a jet fighter at least. Over half the keyboard is not used, which we haven't seen for a long time in a simulation of this detail. That's not to say that it isn't realistic. This will appeal to both newcomers and hardcore flyers alike, and may set the scene for a resurgence of jet sims.

Iceland is teeming with wildlife... Lynxes, Harriers, you name it

DID has performed wonders yet again. From what we've seen this is a definite contender for Simulation of the Year, and it's only Easter! ■

Kenji Takeda

Missile magic, beyond visual range combat has never been easier

Pan and scan, the cockpit here is all virtual

PREVIEW

Publisher:	Rage Games	**Price:**	TBA
Website:	www.rage.com	**Expected Release Date:**	
Developers:	DID/Rage		Spring 2001

WarBirds III

The original online combat simulation gets better

WarBirds is an Internet-based large-scale multiplayer flight sim based on WWII aircraft and weapons. At any given time, you can find people from all over the world on the server, battling for air supremacy. If you've read the news feature and also the Opinion in this issue, you'll see that online flying is set to become the rule rather than the exception, especially for combat fans.

WarBirds was once considered the most realistic re-creation of WWII aerial combat, renowned for its painstaking flight models and its realistic gunnery and damage system. Version 1 made its debut in December of 1995. Version 2.0 was released in 1997, and there have been various upgrades since that time.

Recently we spoke to Jay Littman, producer of WarBirds III, about the changes coming in the next version and he ran through a list of the new features:

190s diving on their victim

Uh-oh! The 262 is coming in for the kill

There will be more than one terrain and at least two countries. WarBirds III will offer multiple arenas with a different terrain for each arena and four sides in each arena. Forty-two aircraft or more will be flyable at the time of launch. WarBirds III will have a new 3D cockpit, allowing players to scroll seamlessly in any direction and with new secondary animations, including pilot ejection

All the bomber turrets will turn to the nearest enemy and automatically start firing. User interface screens are redesigned, making it easier to navigate. The number of mouse clicks to launch the game and fly have dropped from 10 to 5. The flight models for all the aircraft have been fine-tuned and there's a new gunnery model for each weapon and aircraft. A new physics model now takes control movement on each aircraft at a given speed into account. The model also takes into account changing ordnance weights on each aircraft.

While this list isn't exhaustive, it captures the heart of the changes, which are substantial. Other recent improvements include revisions to the damage model. At one time WarBirds used the hit bubble, like every other simulation, to determine damage. It was possible for a projectile to 'score' a hit without actually touching the airframe. After WarBirds 2.5, however, the aircraft was divided into many objects for damage modeling. With WarBirds 2.75 and later, the player must actually hit a part in order to damage it. Damage effects are much more realistic and dependent on the skill of the shooter, (and ultimately the speed and mass of the projectile, including the angle of impact).

Ivan strikes a blow for Uncle Joe

A Fortress squadron taxies out ready for a raid

This really sounds to us like a whole new sim, but the most obvious changes are external. The aircraft of WarBirds III bear little resemblance to any earlier version. With a completely new graphics engine, the ground objects and terrain come alive. One of the most exciting new features we're promised is clouds; but in fact everything you'll see out the window of a cockpit is new. The possibility of flying in clouds will change this sim tactically, for the first time offering pilots the ability to hide or make their escape into clouds.

It was inevitable that WarBirds would arrive in the modern simulation world. The new version should give it a new lease on life, with stiff competition this year in the form of Aces High and Air Warrior Millennium.

Leonard Hjalmarson

PREVIEW			
Publisher:	I Entertainment Network	**Price:**	£18 per month (unlimited)
Website:	www.warbirdsiii.com	**Expected Release Date:**	
Developers:	I Entertainment Network		Summer 2001

DreamFleet 737-400

Hats off to a new Boeing

The DreamFleet 737-400 – you don't see many from Alaska at Manchester Airport

You can see why DreamFleet are saying that this is their best ever panel

A really high quality panel - what DreamFleet are famous for providing

If you want to get ahead, get a hat! The titfers are even visible in spot-view

Last year DreamFleet, the highly respected group of freeware designers took the decision that all their future work would be commercial projects. Everyone is now eagerly awaiting the release of DreamFleet's first aircraft add-on that we'll be able to buy 'in a box', the Boeing 737-400. Flight One, the publishers, describe the 737-400 as a "complete, ultra-realistic aircraft, panel and sound package that will be complex enough to satisfy the more demanding pilots, while also being easy to use and fun to fly." That's probably not the description Boeing use in their sales brochures, but there's no denying that complex, technically accurate, single aircraft add-ons are very popular with flight simmers at the moment – good examples are L-1011 Tristar, Mad Dog MD-80 and the 777-200 and 747-400 designed by Phoenix.

Many readers will be familiar with DreamFleet's excellent freeware Cessna panels and the 737-400 looks to have the same high standards of complexity and attention to detail. The cockpit includes such authentic features as dimming OMI (outer, middle, inner) lamps with adjustable sensitivity, working fuel quantity test, GPWS, and a complete, almost fully functional overhead panel where one can even test the cockpit voice recorder. The centre console will be equally detailed and includes a working audio panel, to control NAV, COM, and ADF audio. If you click something on this panel, it is going to move, or perform some function.

For navigation, aside from the FMC, the panel features advanced vector gauges (CRT displays) for the EADI and EHSI, and these are coupled to a highly realistic control panel located on the centreconsole; identical to the real 737.

Hats off, the crew are ready for a Club 18-30 charter to Malaga

There will be two modes of moving map display, out of a total of seven navigation modes available for the EHSI. In essence, this simulates the real 737 as closely as possible, and is very similar in function to what is found in the glass cockpit panels. Independent brightness controls for the EADI and EHSI are, of course, part of the functionality.

The aircraft's FMC will be a new design and DreamFleet are boasting that it will be one of, if not the most realistic FMC ever created for Flight Simulator. Along with a high degree of functionality and the ability to accept numerous types of flight plans, it will include such details as complete computer keyboard or mouse control, buttons that actually depress when pushed and a dimming CRT display. Interestingly, DreamFleet tell us that the FMC incorporates certain features that will make it easy to learn to operate, which will be a welcome feature considering the complexity of the modern jet airliner.

The package will contain the complete 737 cockpit interior views, and will also include the passenger cabin and separate seat and wing views. While the view of the world from the main panel remains quite large, a special 'landing panel' will increase the size of that view dramatically and it looks similar to panels in DreamFleet's Cessnas. The aircraft itself is also heavy on detail. Designed by Terry Hill, it incorporates some amazing features. For example, there are two pilot's hats hanging up at the rear of the cockpit that can be seen from the panel. You will also see them when looking through the cockpit window from the outside, in spot view! The aircraft sounds are by Mike Hambly, recorded from a real 737 and the complete package will include an initial set of 10 popular airline liveries, and a complete manual.

With such a high quality package on offer, we're looking forward to a busy summer of 737 charter flights.

Derek Smalls

PREVIEW			
Publisher:	Flight One	**Price:**	£29.99
Website:	www.flight1.com	**Expected Release Date:**	
Developers:	DreamFleet 2000		May 2001

There are two new machines in the Fly!II hangar and one of them is this impressive Pilatus PC-12

Fly! II

An all-new sequel, or one they made earlier?

When Terminal Reality announced in January this year that they were going to release a sequel to Fly! we experienced a strange sense of deja-vu. Fly! originally came out in August 1999, and then two months later, along came Microsoft with their latest version of Flight Simulator. Were we going to see a similar scenario in 2001? It seemed on the cards, as there are many rumours flying around about the sequel to Flight Simulator 2000, destined for release in the autumn (see the News section in this issue). However, it seems that Terminal Reality (the developers) and Gathering of Developers (confusingly, the publishers) are drawing the battle lines early on and they are advising that Fly!II will be out by the time you read this preview.

If you aren't familiar with Fly!, here's a quick summary: it was greatly anticipated when it came out, but proved a bit of a disappointment to many of us. The chief criticisms were a limited area of detailed scenery and a larger than normal number of bugs, even for a product of this complexity. The release of Flight Simulator 2000 right on its tail can't have helped sales. However, the simulation itself seemed to have great potential and a couple of huge patches were released. Then, about eight months after the original release, Fly!2K came out (but only in the US). This looked like a sequel, but was actually the original Fly! with the patches added. Fly! never attracted the attention of the add-on providers as much as Flight Simulator, but some notable exceptions are the many scenery additions for it and some nice add-on aircraft from PMDG and Wilco (to name but two). The popularity of scenery for Fly! is a function of the rather limited amount of detailed scenery that comes with the original product. However, anyone whose system conks out when they fly below 1,000 feet in Flight Simulator 2000, due to the strain of handling the scenery engine, might say this is a good thing!

The detail in the terrain is incredible – you get to feel cold and lonely just looking at it

To steal a march on FS2002, Fly!II is definitely going to need a head start and a release now would certainly provide one. However, there's always the risk that an early release may result in an unfinished product or one that isn't substantially different from the original. Apart from a couple of press releases there isn't much publicity around for Fly!II and we couldn't even find anyone at the UK publishers (Take 2) who could talk to us about it. Apart from a poll on Avsim.com to choose the position of the logo on the box, there's very little around to tell flight simmers that it will soon be arriving. Fly!II could be in danger of becoming the best kept secret in flight simulation.

New features

We've had a close look at the new features on offer in Fly!II and the first thing that struck us was that there will be no major changes to the basic program. The developers have obviously worked on the principal "if it ain't broke, don't fix it" and Fly! has always attracted praise from real pilots for its smoothness and general 'flyability' (pardon the pun). We spoke to Peter McLean of Scenery USA and he expects his current add-on scenery for Fly! to be compatible with Fly!II. This will probably be true for most, if not all, the other extra scenery that is available over the Web.

The most significant improvements include two new aircraft – a Bell 407 helicopter and the sophisticated Pilatus PC-12. The current stable of aircraft in Fly! will appear in the new product , but in updated versions. There will also be more areas of detailed scenery for VFR flying. This could certainly be an attraction for many prospective purchasers, as the original Fly! only had five areas of close detail, all in the USA, although you could still fly anywhere in the world.

The new Bell 407 at a tad under 2,000 feet. As well as a superb panel, the city below is an amazing sight

We don't get quite so bowled over by photo-realistic cockpits these days, but if the Bell 407 flies as authentically as it looks, Fly!II will be a winner with chopper fans

All the original aircraft have been updated for Fly!II, including this excellent King Air

Two other major criticisms of Fly! have been addressed and Fly!II will have multiplayer support and damage modelling (in other words, when you crash, you see some evidence for it). We are also promised some interesting system failure effects (to the aircraft, not your PC – leave that to Windows) and there is also the option to engage in a number of pre-configured single-user adventure flights that will give you a score when you complete them. Downloadable adventures will also be encouraged from the Fly! website, either developed by users or Terminal Reality themselves.

Along with some dynamic vehicles for airports to add to the realism when taxiing and enhancements to weather and other effects, that pretty much sums up what will be in the new package. The question we have to ask is, will it be enough? To attract new users it sounds like a very competent flight simulation and as there are no huge differences in operation from the original version, it shouldn't need a new PC to get it airborne (other publishers, take note). However, there may not be quite enough new bells and whistles to persuade everyone who bought Fly! (and/or Fly!2K) to dash out and get the sequel. This is probably where Microsoft have the edge, as they seem able to guarantee repeat sales for every new version of Flight Simulator from those who bought the last one. Interestingly, most simmers we know that have Fly! also have Flight Simulator 2000, so there's definitely a market for an alternative to Microsoft's all conquering sim, the question is, can Fly!II gain a big enough share?

A proposed box design for Fly!II – let's hope they spell 'sequel' right when it gets to the shops!

Fly!II may prove to be that rare beast - a sequel that's even more successful than the original. It's definitely an 'improved' version rather than a whole new model and we'll see when we review it if the improvements have worked. In the meantime, we hope for the publisher's sake that they aren't attacking too early and with a limited supply of fresh ammunition.

Dermot Stapleton

PREVIEW

Publisher:	Gathering of Developers	**Price:**	£TBA
Website:	www.godgames.com	**Expected Release Date:**	
Developers:	Terminal Reality		Spring 2001

For most pilots V1 will be reached as soon as you open the box

An add-on that oozes realism

767 Pilot in Command

If you are a dedicated flight simulator pilot and your quest is for realistic jet flying, look no further. This add-on is definitely state of the art and will have particular appeal to the pilot who wants to develop their flying skill to new levels.

To say that this product impressed us would be an understatement. However, you will only get the full realism if you do the necessary level of homework, as there is a lot of learning to do if you are going to get the best out of this software. It is possible to fly the Boeing 767 in a relatively simple way, as with many other products, but this would mean that you would miss the best that this excellent simulation has to offer. If you are not daunted by a technical product and want to fly a plane with a warehouse full of features that are not available on the more normal add-on aircraft, then this is an extremely worthy investment.

The package

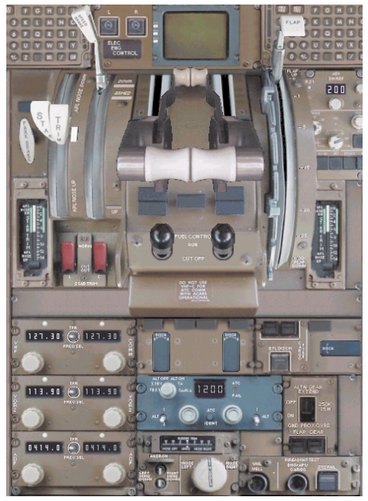
The package comprises a Boeing 767 that can be displayed in 13 detailed liveries. There is a 20-page paper manual in the style of many contemporary add-ons that covers a few things, such as installation and the adventures which are used with the plane. This may seem a little lightweight for such a technically competent product, but don't worry. Look on the CD and you will find five more manuals covering flight management, panel operation, checklists (normal and non-normal) and adventure scripts.

It is advisable to print these 297 pages out, which will use a fair bit of A4 paper and ink, but you will be rewarded with probably the most comprehensive set of airliner manuals produced this side of Seattle. As with a real jet, there is a substantial amount of ground study to be done before you start flying. There is a 'quick start' option, so you can go flying immediately and successfully, but there will be a host of controls and buttons that you are unlikely to understand.

A quick tour

Sit in the cockpit, look around and you will find pretty much everything you could hope for. There are the standard glass cockpit systems, starting with the EADI (Electronic Attitude Director Indicator), which is a highly sophisticated artificial horizon. This shows far more than you will find in any standard Flight Simulator 2000 panel, including the current autopilot mode. Then there is the EHSI (Electronic Horizontal Situation Indicator), which will operate in six modes and six scales. It also has options for the level of detail shown on the EHSI, and all settings are easily selected using the same switches as the real thing. Moving right you will find the Primary and Secondary EICAS (Engine Indicating and Crew Alerting System) screens, again with an impressive amount of detail. All of these glass instruments are very clear and easy to use. The main panel contains a host of other dials, annunciators and controls, including all the warning indicators and an autoland system.

Look up from the main panel and you will find the AFDS (Autopilot and Flight Director System) mode control panel. This is what you would normally think of as the autopilot panel, but here it is very different to the standard Flight Simulator unit and very close to the real thing. The whole AFDS operates as it does on a Boeing 767, which means that it is both complex and extremely useful, however it may take a little time before you become competent operating it. Part of the autothrottle function is managed using the Thrust Mode Control Panel. Again this is faithfully represented although there is no assumed temperature select knob for derated thrust on take off, but this can be selected on the FMC.



The radios are where they should be on the centre console

Selecting the pop-up overhead panel displays a myriad of controls. These are not normally used during the flight, but are used during start up, shut down and emergencies. They include the power systems such as the APU (Auxiliary Power Unit), IRS (Inertial Reference System), hydraulics, pneumatics, fuel systems and engine starts.

Select the pedestal pop-up and you will find the normal engine controls. There are several other controls here, but most importantly you will also find, in their proper place, the radio stacks. The radios are switchable between the active and standby frequencies, which is how it is in all but the most basic trainers. This is an exceedingly useful feature when you need to keep ahead of a fast and complex aeroplane.

Select the Flight Management Computer and you have a fully functioning FMC, with very little variation from the real thing. You can either programme it yourself or import flights from many flight-planning packages, including the one built into Flight Simulator 2000. This is the best FMC simulation we have seen so far and it is only one part of the software.

Test flying

Having had a good look around inside the plane, the time has come to go flying. You can start the flight in any one of a number of conditions ranging from totally shut down to ready for take off. If you choose to start the plane yourself and you are not familiar with a Boeing 767 cockpit, allow yourself one session just to work through the checklists and find everything. This is important because pretty much every switch in the cockpit works. Also make sure that you have at least a basic understanding of the workings of the AFDS.

The pilot's office is bristling with features, almost everything works as it should

The FMC drives the EHSI and the AFDS to make vertical and lateral navigation simple

The overhead panel controls most of the ancillary functions

The passengers seem to be quiet

B767-300 PANEL : SETTINGS
Available panels settings
Description
767 PIC After Landing
767 PIC Approach
767 PIC Climb _Cruise
767 PIC Cockpit Preparation
767 PIC EGLL-LIRF
767 PIC Engine Start
767 PIC First Delivery CYYZ
767 PIC First Delivery KSFO
767 PIC LFPG-UUEE
767 PIC Take Off
Paris Charles de Gaulle Runway 8R to Moscow Sheremetyego Runway 7R

You can use the panel settings from any of your existing flights

The EADI and EHSI give you far more information than those found on most panels

The plane is easily controllable on the ground, which makes taxiing and lining up for take off trouble free. You can now either control the engines yourself or hand it over to the autothrottle and Thrust Mode Control system. If you choose to control them yourself, life is made easier by the Engine Electronic Control system's Command Thrust Display, which shows what the engine N1 rpm will be once it has spooled up or down and stabilised. This makes the engine control far easier. Once airborne, the plane handles suitably sluggishly to give the impression of weight. Nevertheless it is easily controlled using the normal anticipation, together with a combination of power and pitch settings. The autopilot is exceedingly good once you are familiar with its workings.

Can you handle a complex approach after an engine failure?

With a planned route activated in the FMC, the EHSI will show the route and waypoints in plan and map mode using the correct colour coding and graphics for the various features. The radios are automatically re-tuned along the route and the display shows this accordingly. It is not uncommon to be given route changes during a flight, and the FMC correctly handled those tested, despite the 'fix' button being one of the few non-functioning buttons.

When the time comes to descend, you will be able to carry out proper glide descents using the autopilot. If you allow the standard 3 miles per 1000 feet to plan your descent, you should only need minor adjustments on the way down for wind effects. The plane is controllable when tracking approach procedures so long as you handle it carefully. You will need to be wary if you are hand flying the plane, as it is very easy to lose accuracy during the high workload of pre-landing checks and changes. Speed control is both vital and tricky on finals when you are on the wrong side of the drag curve, but that's a problem with jets and it is faithfully represented here.

Once on the ground, the plane takes considerable stopping, especially if you are a little too fast on approach.

Desirable extras

One further feature of the simulator is the option of system failures. You can select a number of specific system failures, or even have flights with random system failures. This mimics the type of periodic check flights that real pilots have to undergo. Even when expecting the failures, you are likely to find handling them very demanding until you are sufficiently practised.

So far, we have reviewed 767 Pilot in Command from a pilot's flying perspective, however if you are keen on the visual and acoustic aspects of the aircraft you will not be disappointed. The jets are well portrayed, with reasonable external detail and the sound is excellent, including faithful representations of the growl of the high bypass gas turbines and undercarriage rumbling in the wind.

Perfection

Well it's not quite perfection, but we believe that the shortfalls are insignificant compared to the quality of this simulation. You may find the text for some of the switches on the panel and images in the manual are hard to read, but once you know what they are, and a competent pilot should know, you will have no problems. Having selected one engine using the 'E 1' keystrokes, we couldn't find a way of returning the control to both engines; 'E 1 2' didn't work. The manual suggests a Zero Fuel Weight of 245 (thousand lbs), however the actual entry is 111.1 (thousand kg). These are actually the same weight in different units, so it is possible that this is not a glitch and the units can be selected somewhere. There was a very occasional screen flicker during the test flying, but this was not distracting. The flight director is not the best we have seen, but it is nevertheless adequate. You are unlikely to find the SIDs for your local airport, but you can define them yourself and save them for future use. It is also possible to speed up the simulation rate with the autopilot on, but then again, that's a pretty good glitch to have.

A new benchmark

767 Pilot In Command has set a new standard for Flight Simulator 2000 add-ons and this test flight has come nowhere near mentioning all its superb features.

There are some short cuts, otherwise you have to start everything yourself

During the review it was possible to refer to both the software manual and Boeing 767 reference material and use either to determine how to manage the flight systems. This is an indication of the attention to detail that has gone into this software. The quality of the many features and their simulation is excellent. Despite multiplicity of extra dials, switches and graphics in the add-on, there was no discernable loss of performance on the fast 933 MHz test machine. If you are keen on piloting a realistic modern jet liner, we have no reservations in recommending this simulator. ■

Stephen Heyworth

REVIEW SCORE:

Publisher:	Just Flight	**Price:**	£24.99
Developer:	Wilco Publishing	**Release Date:**	Available now
Website:			www.justflight.com

At a glance: This add-on for FS2000 has reached a new level of excellence for the simulation of modern glass cockpit airliners. The abundance of features makes it worth every penny.

SYSTEM REQUIREMENTS: PII 300, 64Mb RAM, 3D graphics card

RECOMMENDED: PIII 750, 128Mb RAM, 16Mb 3D graphics card

Scenery USA for Fly!

The Hawaiin islands are all shown in detail. This is Honolulu International

The Magnificent Nine!

We won't pretend that Fly! has always been our favourite flight simulator. Its aircraft panels are big and detailed but the screens and ways of working seem over-complex and clumsy compared with other sims on the market. You can't get it to work with dual monitors, as the windows are fixed and from a VFR point of view, the scenery is quite possibly the least interesting of all. However, third-party scenery designers have come up with some wonderful improvements in recent times. For Fly! aficionados this is excellent news and for those who have criticised it in the past because of its dull environment, new scenery is rapidly making Fly! much more worthy of serious attention. We have also favourably reviewed the Rhein-Ruhr package and now comes some lovely work from Australian designer Peter Mclean, of nine major areas of the USA.

Peter has produced nine CDs, each containing around 600 MB of scenery files. You don't need to load up your hard disk with the goodies, (although you can if you wish) they will run straight from the CDs. This means you have to exit Fly! and load a new CD when you want to use that particular scenery, but the results are worth it. Peter has produced New York, Boston, Seattle, Hawaii & San Diego, San Francisco, Chicago, Washington DC, Miami and Los Angeles so far.

The original default scenery in Fly! is rather like an old Afghan rug which the dog has slept on and the coastlines no more resemble real coasts than any accidentally torn newspaper would. However, Scenery USA gives you Fly! scenery and accurate coastlines as good as you get anywhere. It is very like the scenery in Flight Unlimited to look at and can be checked against the comprehensive sectional maps, which are in Fly! already.

New York, New York, so good they named it twice!

Plenty of scenery

There is little to see in the way of buildings, except the occasional one on an airfield and those in the downtown centres, but it is important to state that each CD contains plenty of scenery for the greater area around each city. These are far from being mere airports. For example, on the Hawaii & San Diego CD you have all eight major islands of the group with beaches, mountains and lakes. Then you have a huge area around San Diego of around 18,000 square miles. Each of the other CDs contains a similar amount of countryside. This seems marvellous value for A$25 (Australian dollars) or around £12 per CD, although over £100 for the whole set is a lot to shell out. They are all obtainable by order from Peter McLean's website www.flyscenery.com.

Hide and seek over Hawaii

We particularly enjoyed flying from the airfield at Martha's Vineyard, in Massachusetts, across to Boston. With the weather set to fine and the varying coastline, islands, harbours and towns showing up well, it was almost as thrilling an experience as being there.

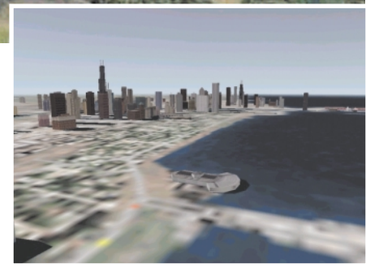
With Seattle in the CD-ROM drive, it is possible to give yourself a frightening adventure by flying inland towards the mountains. Add a touch of nasty, thundery weather, and you could induce a mild heart attack in your own computer room, especially with the lights off.

Miami Nice!

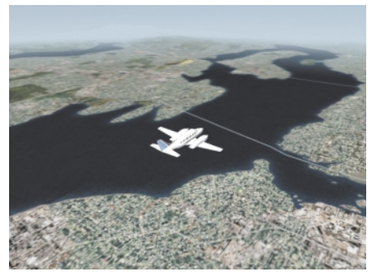
The impact of this scenery is such that we were compelled to go back to Fly's original Disc Two and install all the USA maps that are there. Armed with these, we then loaded Miami, which is the area of the USA with which we're most familiar from the air. The comparison was very impressive. Flying around Fort Lauderdale, the Florida Keys and across the Everglades to Naples in the East, gave an uncanny feeling of authenticity and in this case, deja vu. In particular, the rather large number of dynamic aircraft in the Miami region induces a genuine sense of apprehension, waiting for a mid-air collision.

After using these scenery CDs no-one would want to use the basic version of Fly again. We only wish Peter could produce some UK CDs and it was a bit cheaper to collect the lot! ■

Christopher Jarman



Some buildings show up in the downtown districts of Chicago



Lurking over Seattle and ready for an appointment with Bill

Soaring over Washington DC with a great view of the Potomac River

FROM THE HORSE'S MOUTH

We were so fascinated with Peter's scenery we had to subject him to a quick grilling in the PC Pilot interview chair:

PC Pilot – Peter, we had to ask, what's a nice Aussie like you doing creating scenery of the USA – what's wrong with Oz, or Britain for that matter?

Peter McLean - No plans at this stage to do outside the USA. The only reason I tackled the USA was because all the data was freely available off the 'net (at the required resolution). There are no limitations of where you do scenery in Fly! Getting the 'raw' data is the hardest part of making scenery.

PCP – Not everyone's on the net. Is there any way of ordering your scenery offline?

PM - My only contact is via email - it makes sense for someone whose customer base is 99% overseas! No time differences to worry about, and a much reduced cost! I don't have the facility to take credit card numbers over the phone.

PCP – When Microsoft updated Flight Simulator 98 to 2000, it put a spanner in the works of many scenery designers. Are you worried about a similar situation between Fly! and Fly!II?

PM - The scenery is compatible with Fly!II as it stands. However, the increased features of FlyII will mean I'll run all my original files through the Fly!II editor - the result will be much improved resolution, and a few new features which I'm keeping secret at this stage!

REVIEW SCORE:

Publisher:	Peter McLean	**Price:**	£12.00 per area (approx)
Developer:	Peter McLean	**Release Date:**	Out Now
Website:			www.flyscenery.com

At a glance: More scenery is what Fly! really needs and this is absolutely brilliant. The USA won't appeal to everyone, it's not cheap for the complete set and the CDs are only available over the web. However, well worth getting at least one to expand Fly!, but be careful, you may get hooked.

SYSTEM REQUIREMENTS: PII 333, 64Mb RAM, 16Mb 3D graphics card

RECOMMENDED: PIII 600, 128Mb RAM, 32Mb 3D graphics card

Rhein-Ruhr

Fly! add-ons keep improving!

The impressive Biggesee lake seen from 3000 feet

The little town by the Biggesee

VFR over Germany can be great fun

We saw the original Fly! in a jewel case on sale last week for £10 and it wasn't in a car boot sale, but at WH Smiths. It has got to be a good bargain as a starting point for any keen flight simmer who hasn't tried it yet. The third party add-on in this review comes directly from Germany and is well boxed and presented by Aerosoft Gmbh of Lippstadt. The scenery has been designed by Marc Störing who has also written the manual.

In the box comes the scenery CD plus two glossy A5 booklets. One is the manual written in German and a version of English (why don't these chaps get a native speaker to translate?), and the other, a booklet of the relevant terminal charts by Jeppensen which is very detailed. We say 'a version of English' as it is perfectly easy to understand, but contains entertaining phrases such as "...the region where I was born and bread..." (his father may have been a baker!).

The original Fly! was famous for its very realistic interior panels but rather flat and boring scenery. This package is certainly part of the growing movement by Fly! fans to address that issue and to provide better views outside the cockpit. The scenery is based on satellite photos of the area, and shows in great detail the river Rhine and the urban sprawl of this region.

The installation is completely automatic. Just follow the instructions after inserting the CD. You are also given the option to upgrade your copy of Fly! to Fly 2K plus the option of the 1010 patch (and it makes the £9.99 Fly! stunning value). This is all very convenient and took about 15 minutes. The twelve 'Fly Now' situations, that are provided follow the tradition of the original Fly! sceneries and appear on the menu alongside the others.

The featured Rhein-Ruhr area is the most populated part of Germany, covering more than 10,000 square kilometres of Rheinland and 18 airfields. The major international airports of Dortmund, Koln-Bonn and Dusseldorf are probably the best known.

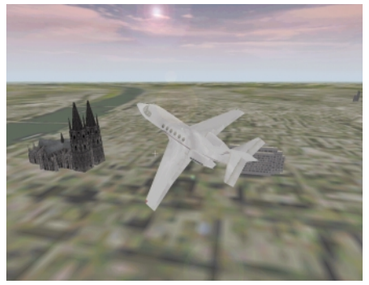
Introduction flight

If you consult the manual (please, break the habit of a lifetime), you'll find that Marc Störing takes you on a round-trip flight as an introduction. We thoroughly recommend this as an excellent way to find out about the scenery, especially if you aren't familiar with the area. The details of the airfields and terminal buildings are excellent and taxiing around gives a good idea of what it must be like in those places. A short field take-off in rain at Dinslaken for example, had our Piper Navajo into the trees with very little ceremony! Unfortunate and realistic!

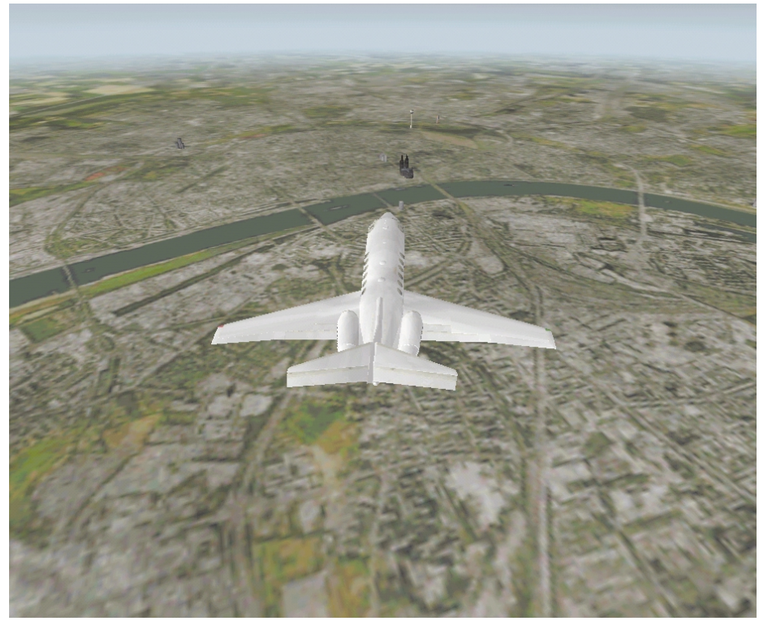
From 3000 feet and above, the terrain of the area is quite impressive. The accompanying maps of the region are as detailed as the default USA maps which come with the original Fly! package.

The German Flight Safety Board has given permission for their ICAO 1:500,000 scale maps to be used and they are very effective. For the majority of simmers who want to fly virtual airline routes and pilot heavy metal across this part of Europe, this scenery will come as a welcome and excellent add-on. For the light aircraft VFR enthusiast, it is still pretty entertaining. To fly around flipping from scenery to map and back to scenery, then whizzing across Germany in slew mode, is great fun. This area is quite acceptable and as detailed as any similar package for Flight Simulator 2000 at the moment. You can see from our screenshot that shows the new scenery at the edge where it joins onto the default, that the improvement is quite marked.

The German ICAO maps look very good



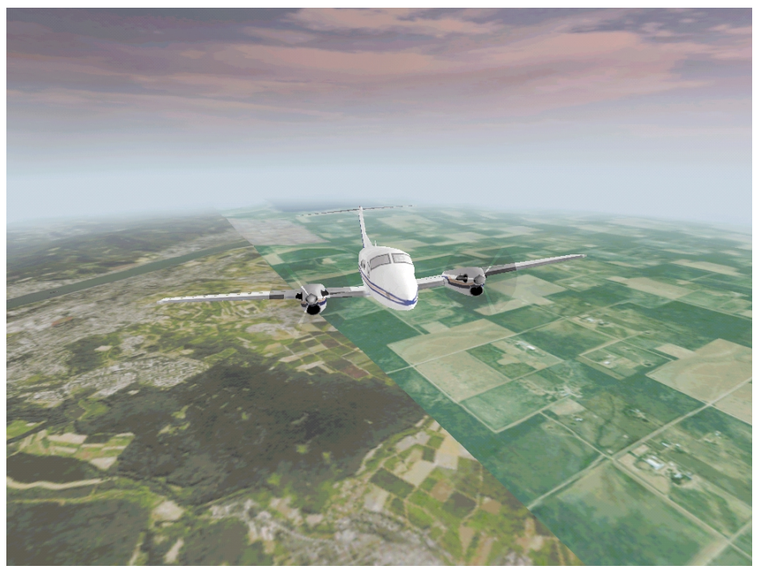
A close-up view of Cologne Cathedral



Cologne Cathedral and the Rhine ahead

It is possible to fly up and down the Rhine at around 2000 feet and see barges and towns come and go and to find one's way by map reading to the various airfields that abound. Buildings are still sparse, and Cologne Cathedral stands very lonely, like a huge cardboard model by the Rhine. This is less a criticism, more an observation that until we have the huge memory capacities in our PCs to give us more low flying realism, this is probably as good as it gets.

Where the old default scenery (right), meets the new (left)



Realistic airfields and terminals – this one is Düsseldorf

Drunken pilots?

In his handbook Marc Störing approaches the question of erratic dynamic aircraft in a humorous way by asking rhetorically, "Are all the pilots of the computer controlled planes drunk?" His own answer being, "As it seems so yes... they take no notice of other aircraft and take short cuts over the grass." This behaviour is blamed on the Fly! engine, and it is promised that it will be changed in future by the developers. In the meantime you may enjoy taking off on a runway while a very large aircraft taxies towards you in the opposite direction. It's your world and you can make the rules!

Christopher Jarman

REVIEW SCORE:			
Publisher:	Aerosoft GmbH	**Price:**	£25.00 approx.
Developer:	Marc Störing	**Release Date:**	Out Now
Website:			www.aerosoft.com

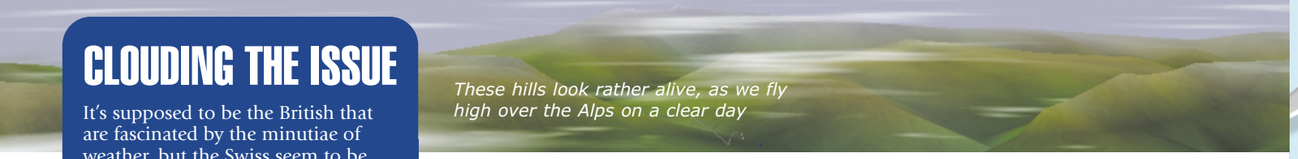
At a glance: An excellent addition to Fly! for Europeans, although we would have liked to see more buildings, besides just famous landmarks.

SYSTEM REQUIREMENTS: PIII 400, 64Mb RAM, 16Mb graphics card

RECOMMENDED: PIII 600, 128Mb RAM, 32Mb 3D graphics card

Elite GenView

Elite gets a facelift



These hills look rather alive, as we fly high over the Alps on a clear day

CLOUDING THE ISSUE

It's supposed to be the British that are fascinated by the minutiae of weather, but the Swiss seem to be running a close second:

First there's a few clouds

Then some 'scattered' clouds

Followed by these 'broken' clouds

And finally, it's fully overcast

A few months ago (issue 4, in fact) we reviewed Elite 6.0 and described it as one of the most accurate procedural trainers on the market. Elite, from Initiative Computing AG in Switzerland, is a product that has long been hailed as the top of the evolutionary tree in this field (and with a price to match). The individual style and undeniable quality sets it apart from more familiar products like Flight Simulator, Fly! or Flight Unlimited, but its format and price (from £250 to £700) has generally restricted it to the more professional flyer, flying clubs, or those few lucky individuals with deep pockets.

However, it seems that the authors have decided that even users of Elite like to see more than a few dots outside their cockpits. The latest release (6.1) now incorporates a system called GenView, providing textured landscapes, accurately depicted weather conditions, interspersed with built up areas and highways. The authors stress that it's still essentially an IFR trainer, with the new external views designed to simply simulate various weather conditions. Concentrating on limited visibility panels, accurate renditions of cloud cover and runway lighting systems.

To make use of GenView you'll need a fairly powerful system capable of supporting OpenGL. Those that are used to running Elite on low end PCs need not apply, because even on a 600 MHz PIII with a Voodoo 3 video card installed, the frame rate is way too low, creating an unrealistic, jerky flight. We also tested it on an Athlon 1100 MHz system, sporting a GeForce 2 GTS and 256 MB RAM, which achieved frame rates over the magic 25fps. The authors tell us that the choice of video card is probably the most important part of the system and a GeForce 2 or TNT 2 card with 32 MB RAM are required components if you want to get useable frame rates and you'll also need to upgrade to Elite version 6.0. With GenView installed, you can look in all directions from the cockpit and it also allows you to slide the panel down to get a better view on approach.

Sitting on the runway on a cloudy day, waiting for clearance

The GenView system works well, given the constraints mentioned above and the finite control over weather conditions it provides are second to none. You can set up to three cloud layers, defining base and top levels with a transition zone controlled over a user defined time span. Or, if you have an Internet connection, you can download METAR reports, to fly in real weather conditions. In either case, the program is supplied with a range of examples for you to try.

The question Elite users have to ask is whether the external view is important to them. After all, Elite is primarily a procedural trainer, so once you get to the runway threshold or complete that hold, the exercise is over. However, we feel it adds another dimension to the program, including the facility to practice circuits and other more visual procedures that were not possible before. ■

Joe Lavery

REVIEW SCORE:

Publisher:	Initiative Computing AG	**Price:**	£ 55.00 per flight area
Developer:	Initiative Computing AG	**Release Date:**	Out Now
Website:	www.flyelite.ch		

At a glance: You might question the relevance of scenery to a procedural trainer like Elite and ask "why have they bothered?" However, it certainly adds a new dimension to Elite and is good value when viewed against the cost of the rest of the package.

SYSTEM REQUIREMENTS: PIII 600 or equivalent, 128Mb RAM, 16Mb 3D graphics card

RECOMMENDED: PIII or Athlon 1000+, 256Mb RAM, 32Mb 3D graphics card

Ready for take off

Flight Simulator 2000 Professional Edition puts you at the controls of 12 realistically constructed aircraft – with the flexibility to download hundreds more. Plot your flight path on the graphical flight planner, receive daily Jeppesen weather updates, and watch your progress on a real-time moving map. This aircraft training and proficiency aid will teach you how to control a vast array of planes, including how to take-off and land at 20,000 airports worldwide. And if you're feeling brave and want to test your flying skills to the limit, you can create a variety of in-flight problems such as stormy weather and engine failure.

Take to the skies – It's as real as it gets.

For more information visit www.ready4takeoff.co.uk

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British Airways 757
Flying the flag

For sale – PC Pilot polygon counter. No longer needed - offers invited!

The first thing that strikes you when you launch BA757, is a strange sense of familiarity. Although the smart box bears a logo and layout that is unfamiliar, the contents have all the hallmarks of a Phoenix Simulation Software product. After a little investigation, it appears that this release under the World Air Simulations banner, (the new incarnation of Papa Tango), was the work of Phoenix, completed some time before the recently reviewed 777-200 and 747-400 packages.

So, having sorted out who's who, is it any good? Well, with a design team like Phoenix behind it, there was little doubt that the product would live up to its pedigree. The 757 aircraft are superbly modelled to the level of detail we've come to expect from Phoenix. With crisp sharp textures over clean fuselage lines, sporting a full compliment of those controversial BA tail art logos. The cockpit is no less impressive, with large clear instrumentation, a partially operational overhead panel and a FMC (Flight Management Computer) that can be programmed like the real thing. It doesn't emulate as many functions as the newer 747-400, but given the constraints of the Flight Simulator environment, it's perfectly adequate for executing a flight plan.

Like the rest of the Phoenix range, the aircraft are not just tasteful works of art, they behave and function like their real world counterparts, with accurately programmed handling characteristics that make them a pleasure to fly.

In order to get you started, the authors have thoughtfully included a set of prepared flight plans and a comprehensive flight manual. Also on the CD you'll find high resolution AERAD SIDs and STARs for Dusseldorf, Heathrow, Amsterdam and Paris Charles De Gaulle airports, in Acrobat format.

These FS Partworks packs combine authentic technical documentation including checklists, with a comprehensive and colourful history of the aircraft - supplied in a pre-punched loose-leaf format but sadly without a binder. The simple marketing idea is that you either buy enough packs, (seven in total) to qualify for a free binder, or send £7.80 to the publishers. Considering the huge price for what is essentially one aircraft, this arrangement seems pretty cynical on the part of World Air Simulations and lowers the value even more sharply – spend nearly £175 and get a free folder? You must be joking! However, with the announcement that Just Flight have acquired the Phoenix back catalogue (see News section in this issue), you should soon find this 757 selling for a much more affordable £9.99. ■

Joe Lavery

REVIEW SCORE:			
Publisher:	World Airline Simulations	**Price:**	£24.99
Developer:	Phoenix Software Simulations	**Release Date:**	Out Now
Website:	www.worldairsim.com		

At a glance: At a glance: A high quality airliner in a very nice box, but let down by a huge price. If you want one, wait for the budget version.

SYSTEM REQUIREMENTS: PII 450 128Mb RAM, 3D graphics card

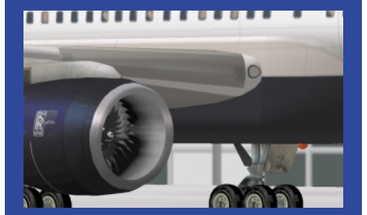
RECOMMENDED: PIII 700+, 133 MHz Bus, 256Mb RAM, 32Mb 3D graphics card

The 'office' has a familiar look about it - that panel is true Phoenix

A dawn start at 05:00 – the 'O' stands for Oh my God, it's early!

En-route – the passengers are wide awake and demanding coffee!

Home at last! Five hours on the M25 and we should be indoors



A close-up of the detail that the Phoenix team are famous for

All aircraft carry those controversial tail logos – love them or hate them!

EWR Early Warning
Guardians of the sky

The EWR Partworks package from World Air Power Simulation (the new incarnation of Papa Tango) is another product originally from the Phoenix Software Simulations stable. It contains two aircraft that were once the backbone of our air defence early warning systems, the Avro Shackleton and the BAe Nimrod. It offers Flight Simulator 2000 pilots a different challenge to the normal GA or commercial aircraft, because although you're flying some fairly heavy metal, passengers are not really a consideration.

We took a look at the Shackleton first, an aircraft that can trace its lineage back to the Lancaster bomber, via the Lincoln. This is a four engine prop driven aircraft that comes with a very effective start sequence, where the mighty Rolls Royce Griffon engines roar into life, producing an authentic stereo image. If you take a quick glance out of the side window you'll see the three blade concentric props, whipping up their own mini hurricanes just a few feet away.

The modelling of the airframe and panel looks a little dated by today's standards but it all works as expected, giving an almost rustic feel as you trundle down the runway. If you take up an external view you'll see that the aircraft sports the sheathed Arabian dagger insignia, symbolic of its guardian role. This view will also show the crew complete with obligatory sunglasses, through the transparent cockpit windows.

In flight the Shackleton is heavy and needs a patient hand at the helm, so don't try any fancy manoeuvres, or you'll find it particularly unforgiving. However, as long as you stay ahead of the game during those critical stages of flight, you'll find it responds well enough. Shackleton pilots always described the aircraft in flight as '50,000 rivets flying in close formation' and this version does a good job of recreating that experience.

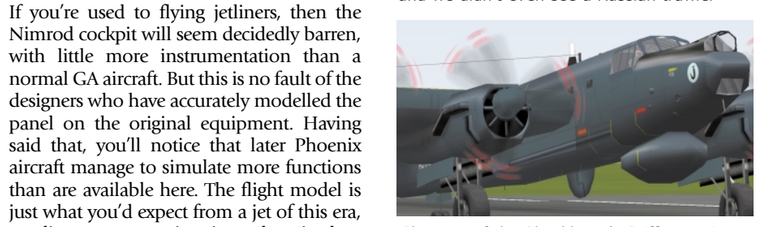
Moving on to the BAe Nimrod, this was originally developed from the ill-fated Comet, the first commercial passenger jetliner, although you'll notice that the basic shape of the Nimrod airframe is somewhat different. The model provided by WAS manages to capture the essence of this aircraft, even though the modelling is not up to the latest standards Phoenix have recently set. A head-on view still shows the familiar polygon-shaped fuselage that used to be the norm. However, the paint job is nicely done and the external control surfaces and landing gear are correctly animated. Like the Shackleton, you also have the facility to open the bomb bay doors using the spoiler key.

If you're used to flying jetliners, then the Nimrod cockpit will seem decidedly barren, with little more instrumentation than a normal GA aircraft. But this is no fault of the designers who have accurately modelled the panel on the original equipment. Having said that, you'll notice that later Phoenix aircraft manage to simulate more functions than are available here. The flight model is just what you'd expect from a jet of this era, needing more coaxing into the air than modern aircraft that have more powerful and efficient engines.

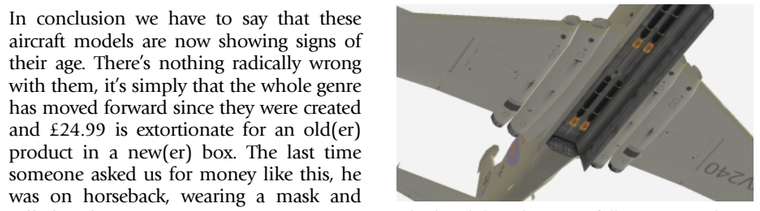
In conclusion we have to say that these aircraft models are now showing signs of their age. There's nothing radically wrong with them, it's simply that the whole genre has moved forward since they were created and £24.99 is extortionate for an old(er) product in a new(er) box. The last time someone asked us for money like this, he was on horseback, wearing a mask and called Dick Turpin! ■

Joe Lavery

The end of a long mission over the Atlantic and we didn't even see a Russian trawler



Close-up of the Shackleton's Griffon engines – the Lancaster was faster with Merlins, but only had half the range



The bomb bay doors are fully operational in both aircraft, but they don't conceal any ordnance

The Shackleton on patrol – can you hear the rivets rattling?

The somewhat chunky construction of the Nimrod by recent standards

The Shackleton cockpit – they don't make 'em like that any more!

STOP PRESS!

From our legal correspondent:

Since writing these reviews of the BA757 and EWR packs distributed by World Air Simulations, we learned that leading flight simulation publishers Just Flight, have acquired the rights to distribute the back catalogue of Phoenix products and that they intend to release many of them (including the 757 and EWR) in DVD-style packaging at just £9.99, which is much better value than the £24.99 currently on offer from World Air Simulations.
A press release from Just Flight claims that Phoenix terminated their agreement with former publishers Papa Tango following a number of material breaches by that company. Phoenix has also recently taken action to stop World Air Simulations from publishing a number of titles incorporating Phoenix software, without its authority.

REVIEW SCORE:			
Publisher:	World Air Simulations	**Price:**	£24.99
Developer:	Phoenix Software Simulations	**Release Date:**	Out Now
Website:	www.worldairsim.com		

At a glance: Generally a very good product, but rather dated and £24.99 is highway robbery for two such old aircraft and a few postcards. Cutting the price would increase the score.

SYSTEM REQUIREMENTS: PII 450 or equivalent, 128Mb RAM, 3D graphics card

RECOMMENDED: PIII 700+, 256Mb RAM, 32Mb 3D graphics card

Real Airports *It's more fun to taxi*

Orly, looking busy near the terminal

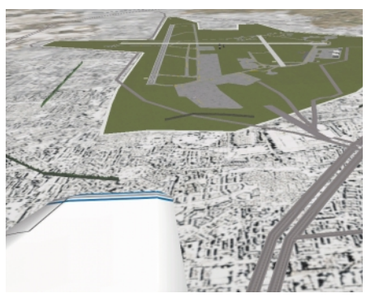
We approached Real Airports with great interest as it clearly bears some comparison with the UK2000 Scenery by Gary Summons, reviewed in our last issue. This time however, the box contains only seven airports, but they're major establishments from all parts of the world - Gatwick, Houston, Zurich, Rio, Milan, Cologne and Orly. Gary is actually responsible for the Zurich airport in this package.

The 80-page manual in English and German has full instructions both for the scenery and for six adventures that are included. These adventures are pretty realistic with flight plans and airfield charts given for them all.

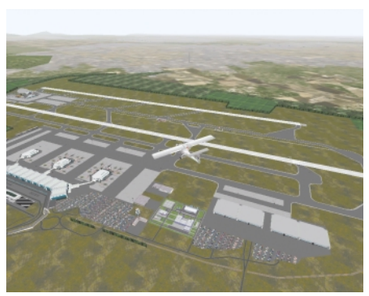
When you load the CD you are assailed with a stream of advertising videos that take about five minutes to watch, although the graphics were interesting and the video was easily stopped by pressing 'escape'. The install whizzed through in about three minutes on a 750MHz machine and some very attractive screenshots stop you getting bored while this happens.

Once installed, it becomes obvious that some serious manipulation of the scenery library for Flight Simulator 2000 is needed if you already have a great deal of extra scenery on board, especially of the UK and major world airports. For those readers who may have this problem, it is a great help to enter the scenery library and de-select those countries and airports that you think will conflict with the new scenery. They are easily selected again and indeed, flicking from one to the other to compare airport views can become quite entertaining.

All the Real Airports sit happily over the default airfields and conflicts are only likely when you have other third-party scenery installed. We liked Orly and Cologne in particular and found Houston the least attractive, but maybe that is true in real life! The European airports contained a wealth of detail and plenty of dynamic scenery in the form of taxiing, arriving and departing aircraft of various airlines. Rio de Janeiro is a particularly exciting place, as the views of mountains and skyscrapers from the runway are intriguing.



A wingtip view of Cologne in winter - it could be a Christmas Card



Italian Skyhawk joins the circuit over Milan Airport

Rio, showing the familiar mountains in the background

Paris nightlife

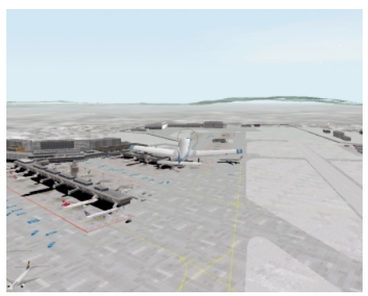
In more detail, Orly was particularly attractive both by day and by night. You can enjoy the sensation of sitting on a taxiway in a big heavy and imagining that you are a senior airline captain. We prefer dashing about in a tiny Cessna, nipping under the wings of the Jumbos and across the grass. Zurich is a beautifully complex airport and set itself well on the Switzerland 2 photo realistic scenery (by Flight Cockpit), which was already installed. With Cologne we began to see some of the excellent dynamic aircraft provided with this scenery. We were almost run down by a large Swissair machine! The frame rate was low, around 5 to 6 fps but acceptable for groundwork. In fact, at Cologne it was great fun just to sit in the tower position and enjoy watching aircraft landing and taking off. Using FSNavigator, it was entertaining to keep re-setting the tower view to different parts of the airfield. This was very realistic at night and at some of the airports we were so busy exploring we didn't bother taking off.

The six adventures add excellent value to the package. There are captain and first officer's voices with internal chat as well as ATC and even the air hostess has her say. The adventures consist of journeys from Cologne to Paris, Cologne to Houston, Milan to Zurich, Houston to Rio, Gatwick to Milan and Paris to Gatwick.

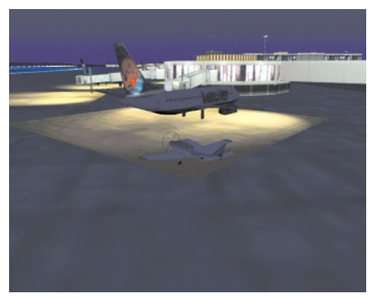
So how did Real Airports compare with Gary Summons' UK2000 scenery? The only airport common to both products was Gatwick. While the Real Airports Gatwick is very good and superior in its provision of dynamic aircraft, the UK2000 Gatwick has more realistic and complex buildings and is definitely superior at night.

However, overall, Real Airports is an excellent package and well worth the money, with the adventures and manual providing very good added value. ■

Christopher Jarman



Swiss winter scene at Zurich - the terminal must be full of skiers



Houston looks more interesting at night with the lights on

REVIEW SCORE:			
Publisher:	Just Flight	**Price:**	£29.99
Developer:	Various	**Release Date:**	Out Now
Website:	www.justflight.com		

At a glance: Some very well executed versions of major international airports. A great manual and adventures add greatly to the value.

SYSTEM REQUIREMENTS: PII 333, 64 Mb RAM, 16 Mb 3D graphics card
RECOMMENDED: P III 600, 128 Mb RAM, 32 Mb 3D graphics card

Paint Shop Pro

You can do it, when you Paint Shop Pro it!

If you spend time browsing around the major flight simulation websites, you'll already know that building and customising aircraft and scenery is a pastime enjoyed by thousands of enthusiasts worldwide. The vast majority of these folk are gifted amateurs who create aircraft with new liveries, scenery areas and cockpit textures that rival the commercial products. But what if you fancy having a go yourself, where do you start?

A word of warning

It's not quite as daunting as you might think, particularly if you begin by simply modifying someone else's textures. Now, before we bring on a barrage of letters, we are not suggesting you pirate someone else's work, or their design (as there seems to be a lot of this going on at the moment). We're merely suggesting that you use something as a starting point to practice on, before attempting to design your own. Most of the people you find within the FS fraternity are quite accommodating, particularly if you ask them for their help or permission before passing on customised versions of their work. However, repainting freeware aircraft and then posting the results on other sites without permission is (understandably) deeply frowned upon and we certainly wouldn't encourage it. You have been warned!

To prove the point, we repainted a WESTJET 737-200 using the 30-day trial version of Paint Shop Pro 7 that was included on last month's CD. The aircraft was originally produced by Jorge Oppenheimer and then recently repainted by Jamie Rimmer. The author clearly states in the readme file that he has no objection to anyone using his textures, so we hope he doesn't mind us changing them for this demonstration.

Getting started

Before you start on a project like this you need to rough out what you want the finished design to look like. The best way to do this is to grab a picture of the original aircraft model, (Paint Shop Pro can do this by the way) then using our trusty toolbox, edit the image to see how it will look. Having decided on your corporate colours, the next stage is to remove the WestJet livery from the original textures, using the colour replace and paintbrush tools. You'll find the aircraft/textures folder, or in the original zip as .*af files. If the background colour happens to be white, as it does in our model, then it's a fairly straightforward process. Otherwise, you'll have to carefully replicate the original paint scheme, using cut and paste or clone from the unaffected areas. Obviously you should keep a backup of the original textures, plus a copy of the blank ones you've created, just in case you change your mind and want to alter the design later. You can lift the colours used from the textures themselves using the dropper tool. In fact, holding down the Ctrl key acts as a shortcut for the dropper in most of the drawing functions. The background and foreground colours can be selected alternately by using the left and right mouse buttons.

Size matters!

You should be aware that Flight Simulator aircraft textures are not always the same size in every model, or even arranged in the same way. It really depends on the author and the level of detail they've chosen at the design stage. Our 737 WestJet uses 512 x 512 pixel sections rotated through 90 degrees and these have an 8-bit depth, which equates to 256 colours. In order to edit them to the new design they were firstly identified (by viewing them in Paint Shop Pro), then changed to full colour using the colour menu. Finally, they were rotated 90 degrees to place them in a more

This is the original WestJet livery

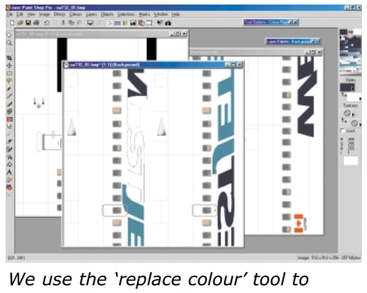
The WestJet now completely nude waiting for the makeover

natural position to work on. We also combined the appropriate sections into a single image to make the design easier to handle, remembering that the image was originally reversed on one half of the design. You can extend the canvas size of the first image to accommodate the three sections, making it 1536 pixels x 512. Then, cut and paste the other two sections into the larger image, saving the selection position information as you go. This will make it easier to chop them up again later.

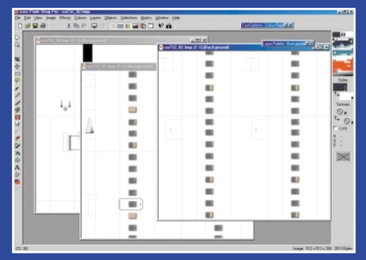
All this sounds very complicated, doesn't it? However, by using Paint Shop Pro it's actually very easy to achieve.

Fuselage colour

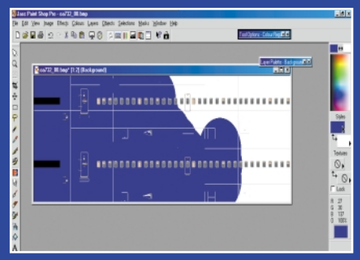
Our original thought was to add the body text, a simple logo and leave it at that, but



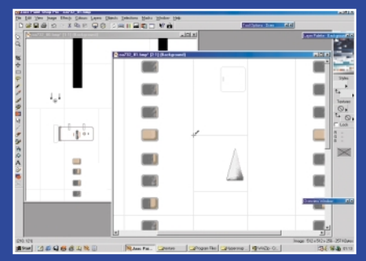
We use the 'replace colour' tool to remove the original logos



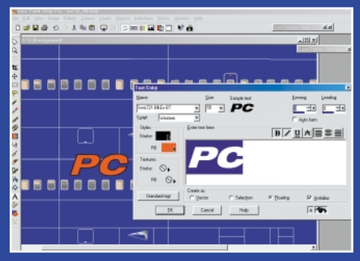
Our fuselage slices are all ready for painting



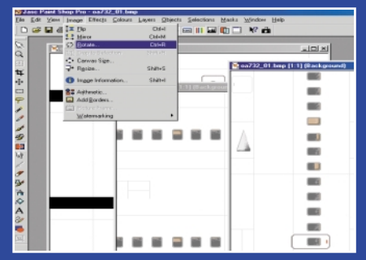
Starting the repaint, again with the colour replace tool



Replacing the lines that were missing from the original

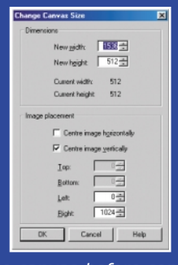


Laying down the PC Pilot lettering on our new paintjob

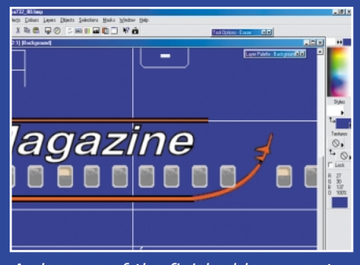


The design is easier to handle if you rotate the pieces through 90 degrees

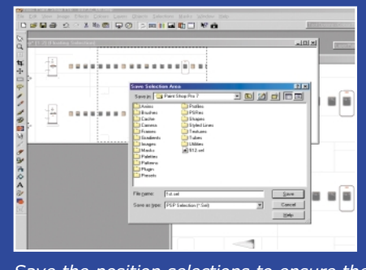
The logo is finished ready for cutting into its original pieces



Extend the canvas before combining the parts into one piece



A close-up of the finished logo – not as difficult as it looks



Save the position selections to ensure the parts are exactly the same after editing

The PC Pilot 737 taxies out for her inaugural flight

then we decided it might look more interesting if we changed the colour of the fuselage altogether. So, blue it is then and the red and white PC Pilot text looks quite startling on a deep blue background, giving it an almost three dimensional appearance.

Drawing the logo was a bit trickier and we made good use of the zoom and bezier curve line drawing options before we got it right. Finally, the engine nacelles and rear tail sections were painted in the same blue, before transferring the bitmaps to the appropriate aircraft texture folder in Flight Simulator 2000, not forgetting to rotate them back to their original orientation and decreasing the bit depth back to 8/256 before doing so.

Most of the painting was done using the colour replace option, which does just that. It replaces the selected background colour with the current foreground colour, ignoring any other colours relative to the tolerance level you set.

Finally, fire up Flight Simulator 2000 and select the WestJet 737 aircraft, where you should see the result of your labours in the aircraft selection menu. If that looks OK, then your new livery is ready for the customary champagne and inaugural flight.

Panel backdrops and scenery

If you have a panel or scenery editor you can apply these same methods to edit your own panel backdrops or scenery textures. The customisation possibilities are endless if you're willing to spend the time. In fact, one of the main problems with many panel designs is the quality of the background image. It doesn't matter how well the gauges have been programmed, if the backdrop is created from a fuzzy low-resolution photograph, then the panel looks awful. Only a few designers have managed to use photographs and produce acceptable results (Dreamfleet 2000 are one that comes to mind). Many others are satisfied with drawing/painting the backdrop by hand, using photographs for reference and in our opinion these panels are generally the ones that look the best.

Completing a drawing like this is not beyond the capability of most designers, who normally have quite an eye for detail in the first place, which in many ways can be more important than artistic talent for such a project. Have a go - all it will cost you is time… ■

Joe Lavery

REVIEW SCORE:			
Publisher:	DigitalWorkshop	**Price:**	£79.95
Developer:	JASC	**Release Date:**	Out Now
Website:			www.jasc.com

At a glance: An excellent utility for those that fancy customising their own aircraft, panels or scenery and well worth £80 if you are going to get serious about it.

SYSTEM REQUIREMENTS: PII 450, 128Mb RAM, 3D graphics card
RECOMMENDED: PIII 800+, 256Mb RAM, 32Mb 3D graphics card

Airways Flying

Plan your flights through the corridors of the sky

Why airways?

If you are going to fly any distance to a reliable schedule in a civil aircraft weighing more than a few tonnes, you will be instrument flying in the airways. The big advantages of using the airways are the ability to get above most of the weather, the controlled environment and the reduced fuel consumption at higher altitudes. So, airways flying is a good thing for flying the big jets, but how do you plan your flights and select your routes? Read on.

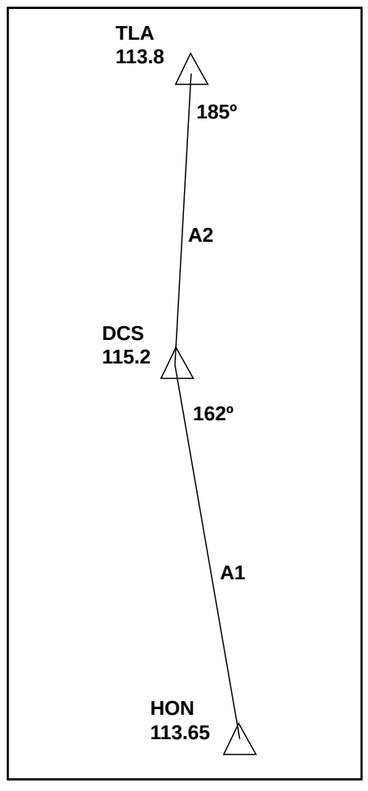
If you were flying for a major airline, it's unlikely that you would select your own route. Either your company or a flight-planning organisation would plan the flight for you. Unfortunately you don't have that luxury, so you will have to do all the planning yourself.

Flight levels

Before we leap in (or up), we should start with a quick primer about altimeters and flight levels. When landing at an airport, it is sensible to have your altimeter adjusted so that it will read zero when you reach the runway. This is standard procedure, and the air traffic controller (ATC) would give you the 'QFE', which is a pressure. You then twiddle the knob on the altimeter until the number in the Kollsman window is equal to the QFE.

If you are flying across country at relatively low altitudes, the important information you want from your altimeter is your height above sea level. This can then be compared with the heights on your map to give your ground clearance. This time the pressure given by ATC is the 'QNH'. Not only are QFE and QNH continually changing throughout the day, they also change from place to place. It would be a terrible mess if the planes flying around the world, passing from country to country, were all trying to change their altimeter continuously. The planes would have to descend or climb every time a new pressure was set on the altimeter. It would also be extremely dangerous, because there would be no guarantee that passing planes were using the same pressure setting.

The way around this problem is to have one standard setting that everybody uses. This is the 'QNE'. It is rarely referred to as QNE because it never changes and is implicitly defined by quoting heights as 'flight levels'. The QNE is always 1013 millibars or 29.92 inches. Because the heights and routes flown guarantee massive ground clearance, the fact that the reading on the altimeter is not really the height above the ground or above sea level does not matter. When a plane is flying using QNE it will be flying using flight levels (FL) and because flight levels are always round numbers, the last two zeros are dropped. This makes FL 245 equal to 24,500 feet on an altimeter that is set to the QNE. When cleared to climb to FL 310, a pilot would set the altimeter to 1013 or 29.92 and climb until 31,000 feet was shown on the altimeter. As everybody uses the same setting, the confusion has been removed and the skies are safe again.



The above is an outline diagram of the route from Edinburgh to Heathrow

The ICAO (International Civil Aviation Organization) defines the standard flight levels to be used based on the semicircular rule. It stipulates that planes flying IFR using any heading between 000° Magnetic and 179° Magnetic should fly at the following flight levels:

10, 30, 50 …. 250, 270, 290, 330, 370 …. etc.

Planes flying IFR on any heading between 180° Magnetic and 359° Magnetic should fly at the following flight levels:

20, 40, 60 …. 260, 280, 310, 350, 390 …. etc.

Notice how everything changes once you reach flight level 290. The separation between aircraft flying in opposite directions increases from 1000 feet to 2000 feet and all the IFR flights are on odd thousands of feet QNE. Don't confuse this semicircular rule with the quadrantial rule, which only applies to UK uncontrolled airspace and hence does not apply to airways flying.

Airway route descriptions

There is a standard way of describing a route through the airways for submission on a flight plan, and we will use this format extensively in this article. The route is specified by the airway names and waypoint names. If you look at an airways map, you will find that, with a little practice, routes given in this way can be followed quite easily. As an example, one route from the Malaga VOR to the Wallasey VOR can be described as:

MGA UN869 BLN UN865 PATEL UN864 SALCO UA29 BHD UA25 WAL

To decode this:

- MGA, BLN, BHD and WAL are VORs.
- PATEL and SALCO are reporting points.
- UN869, UN865, UN864, UN29 and UN25 are the airways.

The minimum number of waypoints is used to describe the routes. There will be many reporting points along the route, but they are not included in the description unless they are absolutely essential to define the route.

Planning for the airways

Back to planning your airways flight. The first thing you will need to do is to decide what height you are going to fly at. In particular, you need to decide if you will be flying in the upper or lower airways. To make life interesting, the boundary between the upper and lower airways is not the same in every country. For example the boundary in Austria is FL 245, whereas in the Netherlands it is FL 195. However, if you are flying a large pressurised jet over any reasonable distance, you will probably be flying above FL 250, so will almost always be flying in the upper airways. Conversely, if you are flying short distances or are flying an unpressurised aircraft, you will be in the lower airways.

The next step is to dig out both your airways charts, the standard instrument departures (SIDs) and standard arrivals (STARs and ARRIVALS) for your departure, destination and alternate airports. Armed with these you have to find a SID, airways route and arrival that gives the best route. This will probably be the shortest route.

When you first look at the airways charts, it will appear that there is a myriad of airways you could use. When you start trying to select the best one, you will have to take into account a few other factors.

- A number of the airways have limits on them, such as minimum or maximum altitude.
- Some airways can be flown in one direction only and these have their airway designation number inside an arrow rather than inside a box.
- There are standard preferred routes to and from some airports as well as through a few busy areas. For example the standard preferred route from ORTAK (just off the Normandy coast) to EGGP (Liverpool airport) at FL 250 and above is:

  UR1 MID UR123 BPK UB4 LESTA UP6 TNT LPL STAR

  And from GWC (Goodwood) to SITET (30 miles north of Le Havre) is:

  R25 DRAKE A34 SITET

There are not too many of these preferred routes, so for flight simulation purposes, you probably do not need to worry about them.

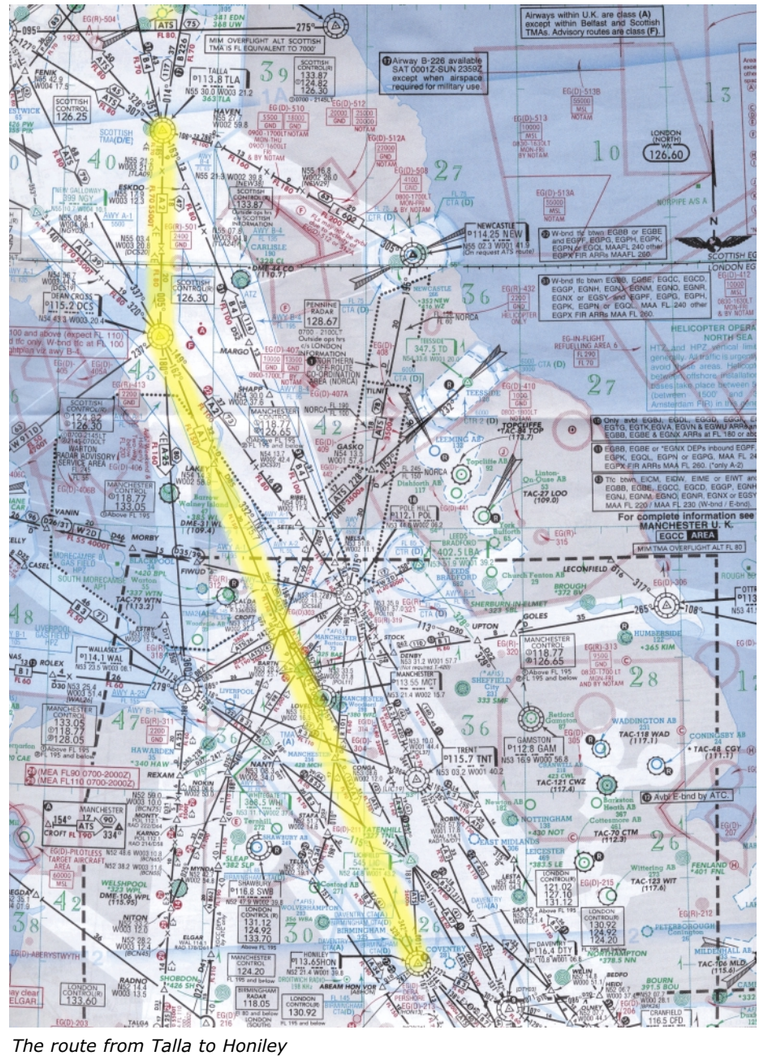
The next step is to select your route through what appears to be a tangled web of airways. When you start to hunt for usable routes, taking any restrictions you have just found into account, you will probably find that there are only a very small number of reasonably direct routes that can be used. Pick the most appropriate one, which usually means the shortest.

The next step is to complete a flight plan, which is required for any airways flight. The flight plan should not be confused with the flight log, which is created on the ground and then used in the cockpit during the flight to monitor your progress. A flight plan is used to let Air Traffic Control know where you intend to fly. It is used to produce both your clearance and to allocate a slot for you through any busy areas.

Flight planning examples

As an illustration, here is the development of a flight plan route from Edinburgh to Heathrow. Start by looking at the SIDs for Edinburgh. There are four available (or promulgated, as they like to say in aviation circles), and they finish at Dean Cross, Grice, Talla and Turnberry. Grice is to the North and Turnberry is to the West, so these are no good. Inspecting the plates for the SIDs shows that Dean Cross is for jet aircraft and Talla is essentialy for non-jet aircraft. Considering a lower airspace route in a non-jet aircraft means that Talla is the SID to use.

Now look at the STARs for Heathrow. Here there are six STARSs, each of which has several variations. The best of these would appear to be Bovingdon One Alpha, which starts at the Honiley VOR near Birmingham. This has a Maximum Authorised Altitude of FL140 when approaching Honiley. Birmingham may seem a long way from Heathrow, however if we had chosen Bovingdon One Bravo, we would have started the STAR even further away at Manchester, which is 119 miles from Bovingdon.



The route from Talla to Honiley

When choosing the SID and STAR you will need to cross check with the Low Altitude Enroute Chart. If you check on your map you will see that there is an easy route between Talla and Honiley, first taking A2 to Dean Cross and then A1 to Honiley. Be careful though, if you look at the chart you will see that the designator for A1 is written inside an arrow, this means that the airway can only be flown in the southerly direction. Now, according to the European Flight Planning rules, you don't need to include the SID and STAR in your flight plan, so your route becomes simply:

TLA A2 DCS A1 HON

If you were flying a Jet and in the upper airways, the same analysis would lead you to an even simpler route because of the need to use the Dean Cross SID:

DCS UA1 HON

Now let's consider a longer route. If you were flying a scheduled flight from Brussels to Manchester, you could choose the following route:

DCT COA UB29 LAM UB3 BPK UB4 LESTA UP6 TNT

The principle is the same as before, it's just a little harder to follow on the chart. Note that the plan is indicating that the requested route starts by going direct to COA. This flight actually passes through the following reporting points:

COSTA SASKI GAMLO XAMAL ERING TOBIX SIRGO FERIT LAM BPK POTON BEDFO LESTA TNT DAYNE

However, because you should only show the minimum number of waypoints needed to define the route, most of them are not included in the flight plan.

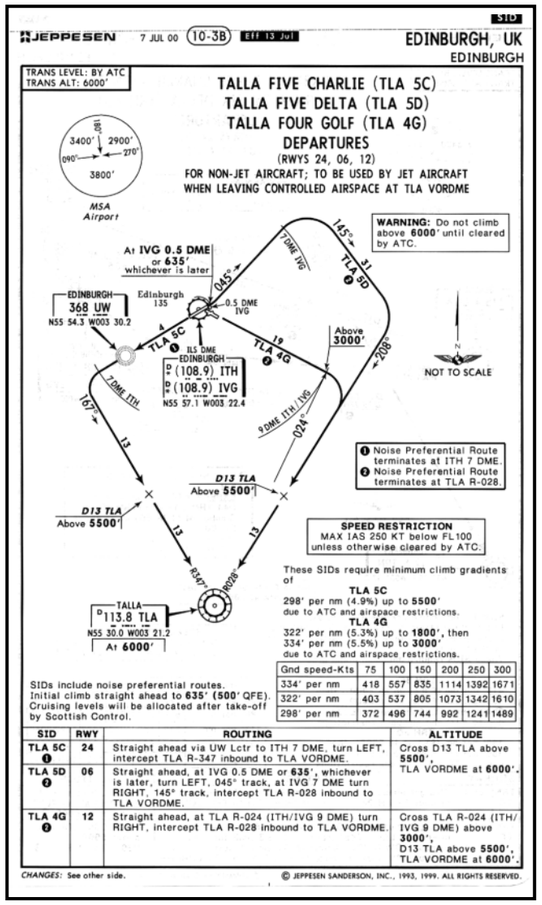
Don't think that this is the only permissible route. The above route is used by one major airline, however another major airline uses the following route, which is completely different:

COA L745 MONIL UL74 UNIDO UB5 ELDIN UL602 DOGGA UB1 OTR

If you inspect this plan, you will see that the plan uses the lower airways until it reaches MONIL and then swaps to the upper airways.

Having completed your flight plan, you then have to submit it. In return you should receive a reply that is one of the following:

ACK – Acknowledgement – Your flight plan has been processed and accepted. It was probably processed electronically and automatically.


JEPPESEN 7 JUL 00 (10-3B) Eff 13 Jul SID
EDINBURGH, UK
EDINBURGH
TRANS LEVEL: BY ATC
TRANS ALT: 6000'
TALLA FIVE CHARLIE (TLA 5C)
TALLA FIVE DELTA (TLA 5D)
TALLA FOUR GOLF (TLA 4G)
DEPARTURES
(RWYS 24, 06, 12)
FOR NON-JET AIRCRAFT; TO BE USED BY JET AIRCRAFT WHEN LEAVING CONTROLLED AIRSPACE AT TLA VORDME
MSA
Airport
WARNING: Do not climb above 6000' until cleared by ATC.
At IVG 0.5 DME or 635' whichever is later
EDINBURGH
N55 54.3 W003 30.2
368 UW
Edinburgh
135
0.5 DME IVG
045°
145°
7 DME IVG
TLA 5D
TLA 5C
TLA 4G
ILS DME
EDINBURGH
(108.9) ITH
(108.9) IVG
N55 57.1 W003 22.4
Above 3000'
208°
NOT TO SCALE
7 DME ITH
167°
9 DME ITH/IVG
024°
D13 TLA
Above 5500'
Noise Preferential Route terminates at ITH 7 DME.
Noise Preferential Route terminates at TLA R-028.
SPEED RESTRICTION
MAX IAS 250 KT below FL100 unless otherwise cleared by ATC.
These SIDs require minimum climb gradients of
TLA 5C
298' per nm (4.9%) up to 5500' due to ATC and airspace restrictions.
TLA 4G
322' per nm (5.3%) up to 1800', then 334' per nm (5.5%) up to 3000' due to ATC and airspace restrictions.
Gnd speed-Kts 75 100 150 200 250 300
334' per nm 418 557 835 1114 1392 1671
322' per nm 403 537 805 1073 1342 1610
298' per nm 372 496 744 992 1241 1489
TALLA
113.8 TLA
N55 30.0 W003 21.2
At 6000'
SIDs include noise preferential routes.
Initial climb straight ahead to 635' (500' QFE).
Cruising levels will be allocated after take-off by Scottish Control.
SID | RWY | ROUTING | ALTITUDE
TLA 5C | 24 | Straight ahead via UW Lctr to ITH 7 DME, turn LEFT, intercept TLA R-347 inbound to TLA VORDME. | Cross D13 TLA above 5500', TLA VORDME at 6000'.
TLA 5D | 06 | Straight ahead, at IVG 0.5 DME or 635', whichever is later, turn LEFT, 045° track, at IVG 7 DME turn RIGHT, 145° track, intercept TLA R-028 inbound to TLA VORDME. |
TLA 4G | 12 | Straight ahead, at TLA R-024 (ITH/IVG 9 DME) turn RIGHT, intercept TLA R-028 inbound to TLA VORDME. | Cross TLA R-024 (ITH/IVG 9 DME) above 3000', D13 TLA above 5500', TLA VORDME at 6000'.
CHANGES: See other side.
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The SID for Edinburgh

MAN – Manual – Your flight plan could not be processed automatically, so an attempt is being made to process it manually. Hopefully with a minor correction or two it will be OK. There will be a subsequent ACK or REJ reply.

REJ – Rejected – Your flight plan contained errors that could not be processed either automatically or manually. In this case you would have to resubmit your corrected flight plan.

The fact that you have filed a flight plan to fly a particular course at a particular time, speed and height does not guarantee that you will ultimately get a clearance to fly exactly as you have planned. The most likely changes will be to your altitude and time, particularly if you are flying where a time slot is required. It is possible to submit repeating flight plans and these are of particular use for scheduled flights. Although repeat flight plans could be expected to be faultless once the first one has been accepted, they can still be modified or rejected at a later date. For example, if airways or reporting points are changed, the original flight plan may become impossible.

Crossing the Atlantic

Those of you that have considered flying across the Atlantic will have noticed that there are very few airways between Europe and America. They all route via Iceland and there is only one that looks sensible. Given the numbers of scheduled planes that make the crossing, this hardly seems adequate. What's more, several airways seem to suddenly stop just west of Ireland and east of North America. Look at a North Atlantic chart and there seems to be nothing there for crossing the Atlantic, despite the chart's name. Well the North Atlantic Oceanic crossing is organised in a completely different way to Europe and most other airways systems.

The tracks are generated from scratch twice each day and each new set of tracks is most unlikely to be the same as the preceding ones. One of the main reasons for doing this is to allow the optimum tracks to be chosen each day. In general terms, the ideal tracks for aircraft to use are those that result in the shortest journey time. This in turn means that the least fuel is used. Now, what is best for one plane is not necessarily best for another, because each plane may be working under a different set of constraints. The main factors that will be taken into account when deciding the optimum routes for planes will be:

- **The departure airport and destination airport**

  Planes flying from Faro in Portugal to Florida are likely to choose different routes to those flying from Oslo to Quebec.

- **The weather**

  The position of cyclones and anti-cyclones, as well as the affect of Rossby waves and their associated jet streams, will determine the wind strength at different positions over the Atlantic. Clearly, tail winds will reduce journey times and headwinds will increase them. As we all know only too well, the weather changes from day to day. This means that the optimum route for an aeroplane crossing the Atlantic also changes from day to day.

- **EROPs/ETOPs**

  Extended Range Operations/Extended Range Twin Operations. Legend has it that a certain aircraft manufacturing company chief executive was asked why he only flew on four-engined aircraft. His reply was that they don't make any aeroplanes with five engines. Nowadays, it is commonplace for aircraft to cross the Atlantic with only two engines. The regulations changed in the 1980s to allow twins to cross the Atlantic as long as they remained within sixty minutes flying time from a suitable alternate airport. The reliability of jet engines has improved dramatically, andoperators who can demonstrate high engine reliability within their fleet can now operate up to 180 minutes from the nearest alternate airfield.

- **Time of day**

  Most westbound flights leave Europe in the morning and most eastbound flights leave North America in the evening. This makes the Atlantic airspace almost a one-way system, changing direction twice each day.

The system works by each aircraft operator giving their preferred route to the controllers. They use this information, together with any other constraints they have, to produce the OTS (Organised Track Structure) for the particular half day. These are published as 'NAT track messages' (North Atlantic track messages) and normally define five tracks used to cross the North Atlantic. There can be more tracks depending on constraints and traffic demands on the particular day. Westbound tracks are given the designation letters starting with track A, where track A is the northernmost. Therefore, if there are six tracks, the southernmost would be track F. Eastbound tracks are given designation letters ending in Z, where track Z is the southernmost. Here if there were five tracks the northernmost would be track V. The tracks are defined by the latitude and longitude of a number of points across the Atlantic. This is normally done at longitudes of 10, 20, 30, 40 and 50 degrees west, although some tracks start at 15 degrees west. The latitude at these points is defined as a whole degree. A typical set of North Atlantic tracks for westbound flights could therefore be:

Track A : 57/10 58/20 59/30 57/40 56/50

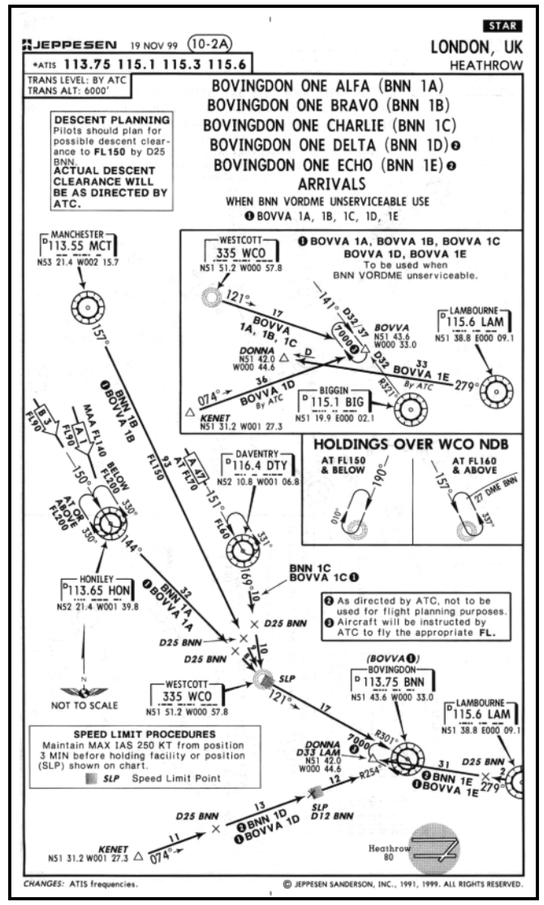
Track B : 56/10 57/20 58/30 56/40 55/50

Track C : 55/10 56/20 57/30 55/40 54/50

Track D : 54/15 55/20 56/30 54/40 53/50

Track E : 53/15 54/20 55/30 53/40 52/50

Aircraft that have an ETOPS limit of 60 minutes may only be able to use track A or track B, whereas those with 180 minute



The Heathrow STAR

limits should be able to use all of the tracks. The ETOPS restrictions will also apply for tracks V to Z for the eastbound traffic. In addition to these are 20 fixed polar tracks, four of which go directly over the North Pole. These are known as the PTS (Polar Track Structure) and are numbered from 1 to 20. They are used for flying to places such as Alaska. Several other wilderness areas and oceans have similar track structures.

When flying across the Atlantic, the aircraft clearance will include not only the route and flight level, but also a Mach number that the aircraft must fly. Mach number is the speed of the aircraft divided by the local speed of sound, and large commercial jet aircraft typically fly at about 0.7 to 0.8. The speed of sound will be different at different positions across the Atlantic, and hence the actual airspeed flown will change. This does not really matter, however, because all aircraft will be affected the same way as they fly down the track. Therefore the critical aircraft separation is maintained.

There are also three supersonic tracks routing from Europe to New York. The westbound track is called SM and is the most northerly route. The two eastbound tracks are called SN and SO. All three tracks are relatively close together and they approximate to the great circle from the west end of the English Channel to Norfolk Virginia. They are used above FL500 so don't conflict with the normal transatlantic jet traffic.

If you fancy crossing the Atlantic, here's a reasonably direct route from Heathrow to JFK. We've put it together by combining a standard SID departure point for Heathrow, Compton, following airways past Shannon to the Oceanic entry point at 53 North 15 West. The NAT track across the ocean follows the great circle reasonably closely as we have no jet streams or other constraints to worry about. The section of the route on the North American side of the Atlantic starts at Gander. For this last section from Gander to JFK we are simply using a route generated by the FS2000 flight planner because it seems reasonable. It's worth mentioning that when we tried using the FS2000 flight planner to generate the complete route through the airways from Heathrow to JFK, it produced a strange plan that tracked South to TANLI near Tunisia/Libya border and was about 2000 miles longer than one we have planned for you here:

CPT UG1 SHA UN535 53/15 53/20 53/30 52/40 50/50 YQX DCT VIXUN DCT YQY J575 BOS J55 PVD J225 JFK

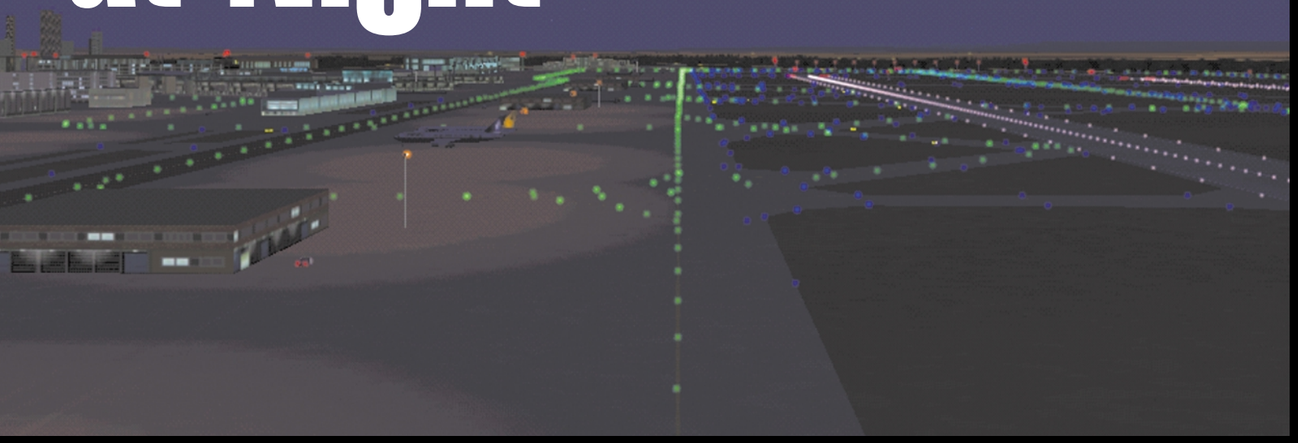
A cunning plan

If you want to plan and fly your own airways flights, you will need an airway map or two. There are several ways to get hold of these. If you have subscribed to PC Pilot since the beginning, you will already have some charts that were given away with issue 3 (now, sadly, sold out). You will also have several SIDs, STARs and approach charts. New airways charts are available from aviation suppliers, such as Transair. Out of date charts, which can be used for simulation, are often available at air shows, and were available at the flight simulation show at Birmingham, in the UK, last year.

Once you have mastered the art of airways planning, you will find that you have a lot more to do on your airliner flights, which is good. If you fly the first of the flights from Brussels given earlier, and monitor your flight through every reporting point, your longest leg time will be seven minutes and your shortest will be one minute. On top of this you will have to work out when to start your descents, how to fly your SID and STAR, and finally fly your instrument approach. You are going to be very busy! ■

Stephen Heyworth

Airport Navigation at Night



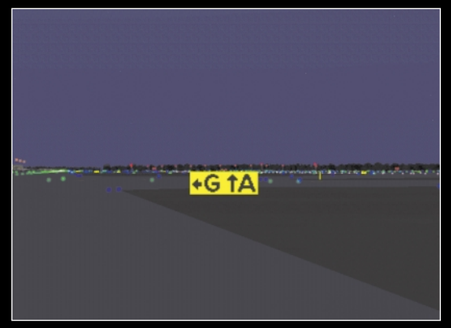
The taxiways have green centrelines and blue edges

How to find your way around in the dark

It's pitch black and overcast. You are fully established on the ILS holding the localiser and glideslope needles bang in the centre. The beeps of the outer marker ident have faded in and out, and at 500 feet you eventually see the runway. You press the tiny transmit button on the yoke and call "Golf charlie papa, visual".

The cool voice of the air traffic controller replies, "Golf Charlie Papa, cleared to land, wind 290 degrees 8 knots ". You deicide that the wind is within limits and that approach seems to be going well, so you can commit to the landing. You lower the final stage flap and guide the plane down to a perfect landing. The tower calls again telling you to taxi to the apron and park on the east side.

After a night landing it can seem that finding your way around on the ground is even harder than the tricky approach and landing you have just flown perfectly. Apart from the runway, which is obvious because you have just landed on it, everything else is just a multiplicity of unconnected coloured lights. The air traffic controller, if there were one, would give a shorthand route to taxi, but even that may not help you much. You could ask the controller which way to turn at each junction, but the ATC on current flight simulators are not this helpful. Asking for directions too many times would probably test the patience of a real controller anyway. So how do you find your way around an airport at night? It's never easy, but here's how it is done.



Some airports have direction boards to help you find your way around

Even at the holding point, the runway can be hard to spot

If you want to taxi to a specific gate or apron and the airport is of any reasonable size, the most important thing you need is a chart of the airport. There's no two ways about it, life is very difficult without a diagram. The routes given by air traffic controllers refer to named positions and taxiways, so you need the chart to know what he's talking about. There are a few ways of getting hold of the layout of the airport. You will find them on the Jeppesen SimCharts program, in airways manuals or in the airport guides, all of which can be bought from aviation suppliers. As there is rarely the helpful ATC on a flight simulator, you could even create your own chart by surveying the aerodrome from the air, possibly taking a screenshot to help you. Armed with the airport diagram you have to navigate much as you would on the road with an atlas, look at the chart and count the turnings. Cross check as you go that what you see matches the chart and if it doesn't, stop, look at your direction indicator to see which way you are pointing, and think.

The next thing to look for is the airport lighting system. The edges of the taxiways and aprons are illuminated with blue lights. These are shown in some flight simulators, but the number of lights that are displayed is usually somewhat miserly. The centres of taxiways are illuminated with green lights. These are typically brighter than the blue edge lights, and are the ones to follow. They can be found on some add-on software, such as German Airports 2, but don't appear in most flight simulators in their basic form.

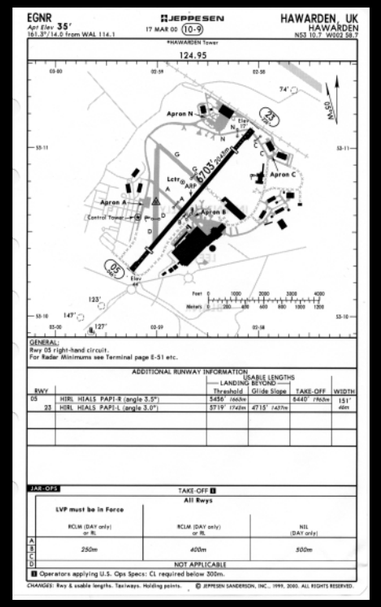
The centres of taxiways are marked with yellow lines to follow. They would normally be visible in the taxi lights. Without very good landing lights, the yellow lines will be hard to spot and follow. If you get a little off track, finding the yellow line again can be very difficult.

If they are there, the great thing about the green lights and yellow lines, is that by following the right ones and taking the correct turnings you will eventually end up where you want to be, either on the apron or on the runway centre line. They are really designed for large airliners to follow, so they should all curve smoothly into each other without any sharp right-angle turns.

When you get to the holding point, just before you enter the runway, you would see a strip of red lights across the taxiway in front of you. You may also see a pair of alternating yellow lights, which are usually referred to as wigwags. This is where you stop to complete your pre-flight checks and receive your take off clearance before taking to the air. Even at the holding point, especially if the runway has touchdown zone lighting, it can be difficult to spot the runway centreline until you are almost on it.

There are marker boards and direction boards at some airports, which can be a massive help to ground navigation. Those that are illuminated are generally impossible to miss, however at many airports they are unlit and can be hard to spot, especially if you don't know where they are. Where they exist, treat them as a bonus, but learn to navigate without them.

It's also worth remembering that many airports have 'parallel taxiways', which are a short distance to the side of each runway. So if you find a long, straight taxiway running parallel to your chosen runway, it will probably take you to the holding point. Many airports have little more than parallel taxiways and a few short cut links to prevent you having to go right to the end every time.



"Cleared from Apron Alpha to November" would be tricky without an aerodrome chart

Hopefully all of this has given you a good idea about how to find your way about the airports. When the next generation of flight simulators is produced they might well have more of these details for you to follow. Until then, keep an aerodrome chart on your knee, your eyes peeled and don't drop your concentration for one second. ■

Stephen Heyworth

Landing at night can be the easy part, this is Frankfurt from German Airports 2

Battle of Britain: The Strategic Aspect

Fly for the RAF or Luftwaffe and command the war

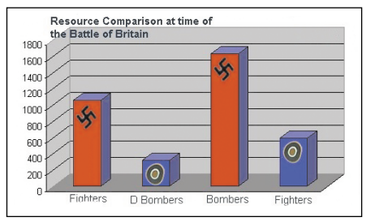
Tally ho!

The air combat resources of the RAF paled in comparison to those available to the Luftwaffe. Short of divine intervention, how could Britain possibly survive? Empire's Battle of Britain offers you the opportunity to find out. It is both a simulation and a strategic game, with the most challenge to be had playing both simultaneously, acting as strategic commander and also flying your missions of choice. Since we reviewed Battle of Britain in the last issue, we've had a chance to look a bit more closely at the strategic side of it and we thought we'd pass on a few tips to any aspiring Dowding or Goering.

Using the Directives

Playing the strategic game can be done in one of three ways:

1. set the Directives and let the game proceed
2. don't use the Directives at all
3. use the Directives but meddle a lot



British resources at the start of the battle

The Directives dialogue for the RAF

The third option works the best. If you set the Directives but don't meddle at all, failing to order additional patrols and intercepts, you will quickly lose the battle.

There are three engagement periods for each day in Battle of Britain: morning, afternoon, and evening. At the beginning of each period the Directives screen will pop up. The Directives allow you to automate mission building based on your strategic priorities. The Directives are in force unless you place the phone 'on the hook' via the icons at the bottom of the Operations Room map, signifying broken contact with your airfields. In this case you must manually assign all targets, patrols and intercepts.

The Directives dialogue is divided into six areas. As you begin the game leave the rest category alone and assign four squadrons to patrol 11 Group airfields. This pulls

Dialogue box for Pevensey Chain Home

Squadrons from further afield and they will come in handy if the Luftwaffe mounts a major offensive.

Early in the campaign we do not patrol industry and factories, but we do assign four squadrons to patrol holes in radar. This is good policy and you'll find that you often vector these squadrons to needed intercepts. Having squadrons aloft shortens response time. Pairing squadrons is not recommended, since it greatly increases the time required to form up and reach their assigned area.

We assign four patrols for convoys, though we rarely assign more than two after the Convoy phase is finished.

Under Sanctioned Responses, leave all default settings except checking the Automatic Scrambling option. If you plan to carefully monitor the strategic situation, you can leave this unchecked. But if you plan to fly a lot, you must enable this option. Toying with Patrol

The mission folder

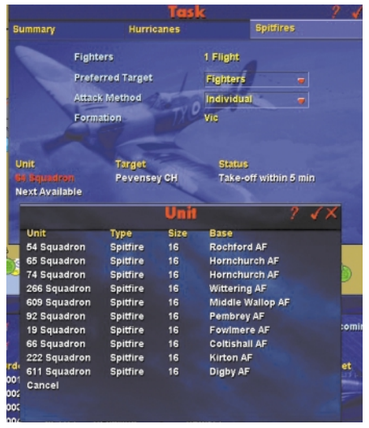
Size is not recommended until you have more experience as Strategic Commander.

Making all these selections doesn't force you to abide by them. You can tweak to your heart's content as the game unfolds, ordering intercepts and patrols and tasking missions as they come up. In fact, we recommend that you add two patrols to the coast around 8am, because at about 9am some of your patrols will need to refuel.

Normally, the game will assign 11 Group to patrol Sector Ops. If this doesn't happen, you should assign patrols to Biggin Hill, Hornchurch, and Tangmere in the south. These centres control outlying airfields.

Adding a patrol

Adding a patrol is a matter of clicking on a target or airfield, then in the 'Patrol' box to assign the patrol (if the airfield is covered by an icon, click the Resources icon at screen bottom to access the field). The Mission Folder pops up to show the details. The default patrol is a flight of six aircraft, and you may get Hurricanes or Spitfires, though Hurricanes are far more likely.



Changing the assigned squadron

If you want to adjust the type or size of the patrol, first select the flight you want to adjust. The white text will turn red. Then click on the Task box in the Mission Folder and the 'Task' dialogue will pop up.

Not all the features of the Task dialogue are evident. Clicking on the Spitfires tab allows you to set the preferred target of the group as well as the attack method. But you can also change the assigned squadron by clicking on 64 Squadron to pull up a drop-down list, which also notes squadron location. When you want a patrol up quickly, you need one close to the target area.

But suppose you want to track a pilot career and only fly for a certain Squadron? Perhaps you want to fly with Douglas Bader's squadron, or fly for the Luftwaffe with Adolf Galland in JG26/III?

The 'Control' Dialogue

The Control Dialogue

The Control dialogue is accessed by left clicking on the far left VCR symbol in the Operations Room map interface. The dialogue has two tabs: Accel and Fly. The Accel tab allows you to set the game speed per event, so that you can move through transition time rapidly, but return to normal time on key events where you prefer to meddle or fly.

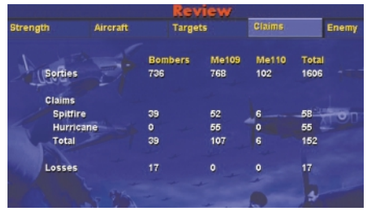
The Fly dialogue gives you custom control over the squadron you fly for, and at which tactical event you are offered the choice to fly. Battle of Britain does this through a simple pop-up interface in the Operations Room.

The Fly tab in Control Dialogue

The hostiles list for the RAF

Vector an intercept

During the battle there are two ways to order an intercept on an incoming flight. Clicking on a hostile group brings up the Hostiles Dialogue, and then you may click on Authorise or Assign Patrol. Authorise will put new aircraft in the air, while Assign Patrol will assign the intercept to an existing flight. Each additional click on Assign Patrol or Authorise adds another flight of six aircraft. Authorising a new squadron (not already in the air) is pointless unless the new raid has formed a great distance away. In that case, you had better have a spare patrol already in the air!



The Review Dialogue for the Luftwaffe

We usually assign a squadron of 12 and two flights of six to a group of 30 bombers. Avoid contact with the Me109s whenever possible, to spare your fighters and to increase your effectiveness against the bombers, which otherwise will ruin your airfields, docks, RDF and factories.

"*A massed attack should be met as far from the target as possible.*"
Robert Shaw, Fighter Tactics

Assigning the intercept as early as possible is important. If the raid is relatively close to English soil, we assign a squadron as soon as the raid is detected. If it is more distant, then we Authorise a new intercept instead, knowing that the patrol has plenty of time to get airborne and form up. This way we reserve patrols for a quick response.

At the end of each day, assess your performance by bringing up the Review dialogue.

Battle of Britain has got one of the finest dynamic campaigns we've ever see and hopefully these strategy tips will help you get the most out of it. ■

Leonard Hjalmarson

Flight Sim Training

Professional instruction with Bill Stack

The charts used in these tutorials have been specially supplied and reproduced with kind permission of Jeppesen GmbH. These charts are NOT to be used for real-world navigation. They are for information ONLY. © 2000 Jeppesen GmbH.

BEFORE YOU START

A few prudent practices that professionals normally apply can make your flights as realistic as possible. The background about this tutorial will also help you enjoy flying while learning about it.

OUR FLIGHTS AND AIRPORTS

We're staying across 'the pond' for this issue and Brainard Airport in Hartford, Connecticut, will be our destination in this instrument tutorial from New Bedford, Massachusetts. Both cities are in the six-state region of the northeastern United States called New England. The distance is about 85 nautical miles, and the direction is west/northwest. This short-range flight will last about 45 minutes from take off to landing.

New Bedford Airport (KEWB) is in southern Massachusetts near Buzzard's Bay, so it aptly calls itself "the aerial gateway to Cape Cod and the islands." It is a diverse municipal airport offering typical services such as fuel, maintenance and lessons as well as sightseeing tours and charter flights for tourists. With its average of 240 flight operations daily, it is a fairly busy municipal airport. You can read more about New Bedford Airport at www.airnav.com/airport/EWB.

Hartford Brainard Airport (KHFD) is the general-aviation airport for Hartford and central Connecticut. Operated by the State of Connecticut, it offers all services typically found at municipal airports such as fuel, maintenance, charters and flight training. Because it is just outside downtown Hartford, it has a noise-compatibility program similar to noise-abatement procedures used at commercial airports. Details can be found at the airport's website: www.dot.state.ct.us/bureau/ap/apo/brain-1.html.

The major feature of today's flight will be the use of an LDA (localizer type directional aid) approach at our destination. An LDA is a navaid used for non-precision instrument approaches. Basically, it is a localizer that is not aligned with the runway centeline and is not part of a complete instrument landing system (which means it lacks a glide slope). Additionally, we will fly a holding pattern by necessity, instead of by choice.

OUR AIRCRAFT

Since we left off last time with the Mooney Bravo, we will fly it again on this tutorial. Its speed will make a nice 45-minute flight to Hartford. We will compensate for its brevity with the challenging LDA instrument approach at KHFD.

THE CHARTS

Familiarise yourself with the Jeppesen charts we will use for these tutorials. They show the flight path, fixes and navigation aids.

As well as the charts reproduced from the Jeppesen Sim Charts program that you'll see in this tutorial, we've included high resolution images of recent Jeppesen charts on the cover CD. For more information see page 11.

USE FLIGHT PLANS

Be sure to lay out your trip on flight plans. If you don't use the automatic flight planner, use conventional paper flight plan forms. Indicate all your navaids and fixes as well as your estimated fuel needs.

In lieu of filing your flight plan with ATC as real pilots do, imagine that you have filed in accordance with regulations. Keep your flight plan handy throughout the flight so you can easily refer to it. After your flight, file it in a folder or loose-leaf notebook.

NOTE THE TIME

Jotting down the time of significant events during your flight is a good idea even though it isn't necessary when using the GPS. This will show the estimated arrival times at fixes and the destination. Nonetheless, keeping track of your departure and estimated arrival times as well as the duration of each procedure is useful for knowing whether you are on time or will arrive late or early.

COMPENSATE FOR WIND

Deviations from your desired course will consume additional fuel and delay your arrival, so always account for winds in your plan. Refer to our Issue 4 tutorial for detailed explanation of wind compensation, the wind triangle and the calculation of wind-correction headings.

MONITOR YOUR PROGRESS AND STATUS

Throughout your flight, check your instruments for the status of your aircraft and engine. Check your position frequently with GPS, radio navaids and/or time/speed/heading. Monitor your engine-temperature, oil-pressure, fuel-flow and fuel-supply gauges. Correct as necessary to maintain desired course, altitude and performance levels.

SIMULATE AIR TRAFFIC CONTROL

This tutorial across Massachusetts will take you through airspace congested with general-aviation, commercial and military traffic using aircraft of all sorts from smallest to largest and slowest to fastest. Real pilots flying in this airspace are under strict ATC guidance and must have clearances for just about every action. In lieu of ATC in your sim, make yourself aware of the nature of this airspace and a pilot's obligations and relations with ATC.

FLY ONE STEP AT A TIME

While leaping over the basics and plunging into advanced flights is a great luxury of flight simulation, it is not realistic. Real pilots do not start at the end of the training course and work backwards, because it deprives them of the skills needed for meeting subsequent challenges. When flight simmers try to meet challenges for which they are unprepared, they frustrate themselves with poor performance and errors. So we strongly advise doing everything one step at a time and building your skills toward the next levels, just as real pilots do.

USE THESE TUTORIALS FOR SIMULATED FLYING

These tutorials are intended for computer flight-simulation, not for real-world aviation or real-world flight training. While making our tutorials as realistic as feasible, we have adapted them out of necessity to the limits and nuances of flight simulation, so some aspects cannot and do not apply to real-world flight. Therefore, we caution everyone to use these tutorials for their intended purposes and we accept no liability for anybody's misuse of them.

OUR AUTHORS

Bill Stack is an expert flight simmer and author of several popular flight sim books. Nels Anderson, our technical consultant, is a certified pilot and president of flightsim.com

Learn more about flying like a real plot from Bill Stack's five flight sim books at www.topskills.com/flitsim.htm

Bill Stack

REFER TO OUR PRIOR TUTORIALS

For space considerations, we will not repeat common aspects in every tutorial. If you don't have our previous tutorials, back issues are available from PC Pilot – visit www.pcpilot.net. Issues 1, 2 and 3 are now sold out, but we've re-published them in CD format, together with Tutorials 1-8. This is great value with prices from £7.99. For more details see our subscriptions page or the website.

Issue 1 Taking off, straight and level, traffic pattern, landing, ILS approach. London City (circuit)

Issue 2 VFR pilotage, IFR radio navigation, using SIDs, STARs, IAPs London City to London Stansted

Issue 3 Attitude flying, VFR dead reckoning, IFR NDB Approach London Stansted to Birmingham

Issue 4 Wind compensation, VFR with radio navigation, IFR VOR/DME approach Birmingham to Dublin

Issue 5 VFR scenic coastal flight, IFR fixes, holds, procedure turn, ILS approach Dublin to Glasgow

Issue 6 Night flying Glasgow to Manchester

Issue 7 Global positioning system Manchester to London Heathrow

Issue 8 Fuel calculation Heathrow to Cork

Issue 9 Flying a back course - Hanscon to New Bedford

LDA APPROACHES

When flying an 'Localizer-type Directional Aid' approach, aircraft approach the airport on instruments at an angle to the runway, then turn to the runway visually and land normally. LDAs are challenging because the flight path changes up to 30 degrees very near the runway approach area and very close to the ground. At this airport, the turn is about 20 degrees to the right. Although LDAs are rare compared to other instrument approaches, they are common enough that instrument pilots should know how to use them.

Frankly, an LDA approach is one of several instrument-flight procedures where the macho simmers can develop some humility. Simmers who bypass visual simming because it's too mundane for them will surely find themselves overwhelmed during this and certain other instrument-flight procedures.

FLIGHT SETUP

Prepare your simulator for your flight. It takes only a few minutes, and it makes your flight more challenging, more realistic and more fun.

SET UP YOUR WEATHER

For this flight, we will use simulated conditions that existed when we laid out these tutorials in the winter. The overcast clouds will mandate instrument flight and block most of the scenery. Set your weather as shown in our weather table.

Today's Weather Conditions

Visibility	5 miles
Wind	4 knots
	040 degrees
Clouds	Broken 7/8,
	Ceiling 1,000 MSL,
	Top 4,500 MSL
Precipitation	Light snow
Temperature	30 F, -1 C
Dew Point	30 F, -1 C
Pressure	29.98in

Whether you fly during daylight or night is immaterial, because there is no practical difference for instrument flights. If you want to fly at night, refer to our Issue 6 Tutorial for details of night flying. To make the flight a bit more interesting, you might try taking off before dusk so you will leave one airport in darkness and arrive at the other in daylight, or vice versa. On a flight this short, you would be flying at dawn or dusk, respectively.

PREPARE YOUR AIRCRAFT

Be sure to prepare your aircraft for flight before taking off by setting your radios and gauges and turning on your lights. The following conditions generally apply to most flights. Choose the Mooney Bravo, preferably the IFR version. All our time estimates are based on this aircraft. Feel free to fly this tutorial in other aircraft later.

We will take off from New Bedford's runway 5, because it most closely faces into our 040 wind. Start your flight at this point. Additionally, we will calculate our fuel needs and carry enough for our trip, just as we did in our last few tutorials. Using the method explained in tutorial 8, calculate the fuel you will need for this flight. Factor the Bravo's fuel usage rate, the flight duration and the legal requirements. Remember that the Mooney Bravo uses about 16.5 gallons of fuel per hour from take off to landing.

SET UP YOUR AIRCRAFT

Make your aircraft ready for your flight. 'Buy' enough fuel based on your fuel calculations. Your fuel mixture should be rich, and your propeller pitch should be low at these low altitudes. The cowl flaps should be fully open while on the ground and during take off and climbout. The carburettor heat should be off, because it is not needed and its use will reduce performance when the best is needed. The Pitot heat won't be needed unless the temperatures are below freezing and there's moisture in the air.

TUNE YOUR RADIOS

Although you can rely on your GPS for navigation, you still need your conventional radio navaids for airport operations and as a backup during the enroute portions. Set your Nav1 and Nav2 radios and your OBI for the first frequencies and radials you will use.

SET YOUR GPS

As usual, pilots should know how to use the GPS devices in their simulators, that is, how to engage the devices, change view screens, select data and so forth. If you don't know, check your simulator's manual for instructions

Engage your GPS by displaying it on your screen, then check the displayed course to be sure it reflects your desired flight path. Don't worry about the SIDs, STARs or IAPs, because the GPS does not reflect them. Set the map for 'north up', 'course up' or 'track up', whichever you like best.

PREPARATION CHECKLIST

(This checklist is for these tutorials, only, and is not intended to be complete.)

Aircraft Settings

Engine:	running
Fuel supply:	adequate
Fuel mixture:	richest
Propeller pitch:	highest
Cowl flaps:	open fully
Wing flaps:	10% (specified by Mooney)
Carburettor heat:	off
Pitot heat:	as needed
Rudder:	straight
Ailerons:	neutral
Elevator trim:	neutral

Gauges

Altimeter:	local pressure
Amperes:	neutral
Vacuum:	green
Oil pressure:	green
Fuel pressure:	24 psi (specified by Mooney)

Radios

Nav1: 115.6 (Providence, PVD)
Nav2: 114.9 (Hartford, HFD)
ADF: 244 (Lomis, HF)
OBI1: 295/115
OBI2: 279/097
Com1: 118.1 (New Bedford CTAF)

GPS

Map view:	on
Orientation:	as desired
Zoom level:	as appropriate
Plotted course:	as filed
Displayed:	as needed

Lights

Beacon:	ON
Strobe:	ON
Position (navigation):	ON
Landing:	ON
Taxi:	ON

Clock

Local time or your choice

IFR (Instrument Flight Rules) Tutorial *Part 10*

A turn for the best - humility for the macho on an unusual approach

This instrument flight rules (IFR) trip from New Bedford, Massachusetts, to Hartford, Connecticut, is simple except for its localizer-type approach. It will also be more practice flying holding patterns. The entire flight is about 85 miles and should take about 45 minutes from take off to landing.

READ YOUR CHARTS

The charts for today's flight show the instrument procedures for all its portions: 1) departing New Bedford Airport (KEWB), 2) flying through the busy airspace of southern New England, and 3) approaching Hartford Brainard Airport (KHFD). Familiarise yourself with all relevant aspects of these charts before taking off so you won't have to fumble around enroute trying to figure them out. Note that some of the instrument procedure charts are not to scale, so the courses depicted on them are not precisely drawn. On these charts, follow the textual directions and use the graphical depictions for comprehension only.

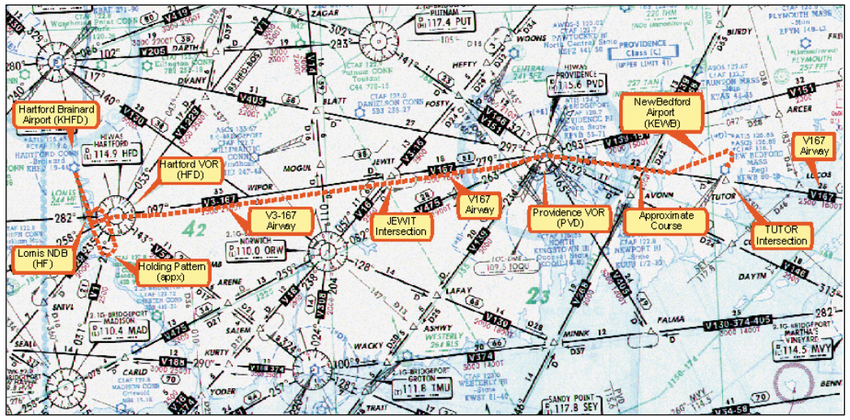
Because ATC guidance is unavailable to us, we will suppose the guidance we might get and rely on our GPS for supplemental guidance.

Departure

New Bedford does not have standard instrument departure procedures for any of its runways. In lieu of these procedures and ATC guidance, we will simply turn left and head toward the first leg of our course toward Hartford. This means our enroute portion will begin as soon as we depart KEWB's airspace. The track distance between our takeoff and our first fix on the route is about five nautical miles.

Enroute

The enroute chart shows a convenient airway between KEWB and KHFD - V167. The first leg we will use passes just south of KEWB between PEAKE intersection, south of Cape Cod



Our route from New Bedford to Hartford

to Providence VOR (PVD, 115.6). The second leg goes from PVD to Hartford VOR (HFD, 114.9). Between an intersection named JEWIT and HFD, the airway is shared with an airway named V3, so this leg is identified as V3-167. We can use JEWIT as a waypoint if we like.

According to the chart, the minimum altitudes for these airways are 2,500 feet (763 metres) MSL between TUTOR and JEWIT, and 2,600 feet (793 metres) MSL between JEWIT and HFD. With our westerly IFR heading, our cruising altitude will be 6,000 feet (1,830 metres) MSL, which is well above these minimums.

The chart also shows that the total distance from TUTOR to HFD is 73 nautical miles. Adding the distances from the origin airport to the airway and from the airway to the destination airport shows that our total distance is about 85 nautical miles.

Arrival Hartford Brainard lacks prescribed arrival procedures, so we will simply head for the initial approach fix (IAF) for our LDA approach. The distance from HFD to the instrument approach procedure is about two miles. (Note: We are using "HFD" in reference to the VOR and "KHFD" in reference to the airport.)

Approach

Approach our selected runway at KHFD is 2, as the winds are from the northeast. Actually, we flight simmers selected runway 2 so we could simulate an LDA approach, then we set the winds to 040 to justify using this approach. The IAF for this approach is Lomis NDB (HF, 244), which is 5.9 nautical miles south of runway 2's threshold.

In an earlier tutorial, we flew a holding pattern by choice. Now we will fly one by necessity. During our trial flight of this approach procedure, we were overwhelmed by too many tasks and too little time for executing them. So we concluded that the only safe and effective way of flying this approach from HFD is to fly the holding pattern anchored on HF. We can use the holding pattern's outbound and inbound legs for executing some of the approach procedure's tasks.

The profile view shows that aircraft are to follow a few step-downs on the approach: 2,500, 2,200, 640 and 400 feet MSL (763, 671, 195 and 122 metres respectively).

After following the LDA course, we will transition from instrument approach to visual approach. The chart says the final approach course crosses the runway centreline 1,323 feet from the threshold, so we will turn right and head for the runway well before reaching it. Nonetheless, we

Pilot: PC Pilot — **Flight-Sim Flight Plan** — Date:

Flight Rules (circle one)	Aircraft Type	True Airspeed	Departure Time	Cruising Altitude	Arrival Time
VFR / IFR	Single engine	150 kts		6,000 MSL	

Flight Route: Landmarks	Navaids & Frequencies	Headings	Distances	Durations
	PVD, 115.6	296	30 nautical miles	10 minutes *
	JEWIT	280	18 nm	7 min
	HFD, 114.9	279	55 nm	13 min
	HF, 244	273	4 nm	2 min
	I-HFD, 109.7	002	15 nm	10 min
			88 nm	42 min

* Durations are based on likely airspeeds for the given legs and rounded up.

Origin Airport	Destination Airport	Alternate Airport (IFR only)	Estimated Duration
Name: New Bedford KEWB	Name: Brainard KHFD	Name: Bradley KBDL	42 min
Elevation: 80	Elevation: 19	Elevation: 174	
ATIS: 126.85	ATIS: 126.45	ATIS: 118.15	Fuel Needs
Tower or Departure: 118.1	Tower or Arrival: 119.6	Tower or Arrival: 127.8	20 gallons

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Our flight plan

will likely make a number of course adjustments on the final approach, which is a new experience for everyone following this series of tutorials. That little bit of northeast wind will make the procedure even more challenging.

PLAN YOUR FLIGHT

Based on these charts, lay out the course you will fly from New Bedford to Hartford. Include all the airways, navaids, intersections and fixes shown on the charts.

Electronic Flight Planner

If you use the Flight Simulator 2000 electronic flight-plan feature, you can include all needed navaids, intersections and fixes. When this feature is used, the GPS window will show your course to these fixes and the destination airport. If you chose to not use it, you will need to head toward them until the fixes appear on the GPS map, then head directly to them. Or, you can revert to conventional radio navigation and forego the GPS guidance altogether. You might try the flight once with electronic flight planning and once without for the different experiences.

To use the electronic flight planner, enter the following data or have the planner choose them for you. To establish the V167 airway as your route from KEWB to PVD, choose intersection TUTOR as your first waypoint after KEWB (it's about one mile south of the airport). You do not need to literally fly to it, however.

Departure: New Bedford Airport (KEWB) Runway 5

Arrival: Hartford Brainard Airport (KHFD) Runway 2

Alternate: Meriden Markham Airport (KMMK)

Waypoint: TUTOR

Waypoint: Providence VOR (PVD)

Waypoint: JEWIT

Waypoint: Hartford VOR (HFD)

Waypoint: Lomis NDB (HF)

Altitude: 6,000 MSL

Paper Charts and Flight Plans

The electronic flight planner is handy, and the old-fashioned paper charts and flight plans are still useful for seeing our course and estimated times at a glance.

PREPARE YOUR AIRCRAFT

To make your aircraft ready for this flight, use our abbreviated checklist in our Flight Setup section.

TAKE OFF

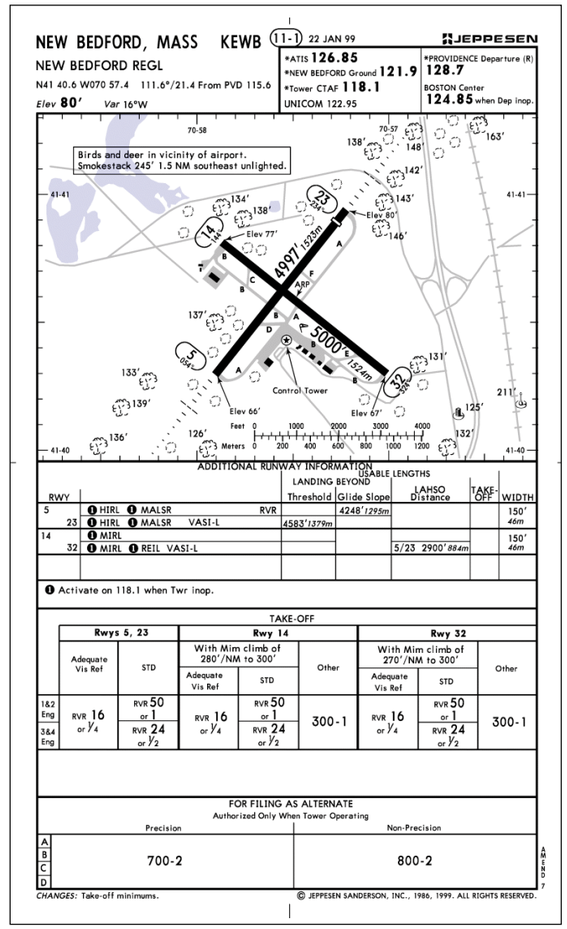
Take off normally, including cockpit preparation and appropriate ATC clearances, as explained in our previous tutorials. Additionally, check your engine instruments. The Bravo's manifold pressure should be at or above 38, and the oil pressure should be at least 24. The Bravo should lift off at about 60 to 65 knots. If you use other aircraft for this flight, its performance characteristics will differ from these.

During take off and climbout, you will have a mild headwind and with a slight crosswind component ten degrees left of centre, so be sure to keep your aircraft on the runway centreline throughout your take off roll and climbout.

Climb out at about 85 knots. During your climbout, adjust your cowl flap as necessary to keep your engine temperature in the green range - not too hot or too cool. Retract your flaps at about 90 knots. After your initial climbout, your Bravo should be able to climb easily at 700 feet per minute and 120 knots.

DEPART NEW BEDFORD

Without a departure procedure, we have no prescribed climb rates. So use typical airport traffic pattern procedures by climbing at 85 knots to 1,000 feet (305 metres) AGL. With this airport's elevation being only 80 feet above sea level, a 1,000 MSL altitude will be suitable. When you reach this altitude, turn left 140 degrees at a 20-degree bank and head 270 toward the V167 airway. Continue climbing to our cruising altitude of 6,000 feet (1,830 metres) MSL. In a couple of minutes, you will exit KEWB's airspace.



New Bedford Airport diagram

Join the Airway

When you intercept the V167 airway, turn right 25 degrees and follow V167 to PVD at a 295 heading. You might reach the airway and cruising altitude at about the same time, as we did in our trial runs. For the remainder of this leg, you will have a mild northeast crosswind gently pushing your aircraft toward the southwest (toward your left), so adjust your heading to compensate.

If you are using the GPS course plotter, which shows on the map screen the courses from origin airport to the fixes to the destination airport, simply follow those course lines for each segment. If you are using GPS but not the course plotter, follow the V-167 airway shown on the GPS map (of course, this GPS feature would need to be engaged).

As you climb to higher altitudes, your engine will behave differently. It will have less oxygen to breathe, so you will need to adjust the fuel mixture to compensate. If you don't, the engine will not perform well at all. The engine is performing best when the turbine inlet temperature (TIT) gauge reads 1750, so adjust the mixture until the TIT returns this reading. Do not exceed 1750, however. Again, these performance readings do not apply to other aircraft.

While flying through clouds in this cold winter weather, you will likely encounter icing, so engage your Pitot heat and propeller de-icer.

You can conserve fuel by changing the propeller pitch at higher altitudes. We found that the Bravo cruises easily at 170 knots and uses 15 gallons of fuel per hour with the following engine settings:

RPM 2,000, manifold pressure 30 and TIT (1300). If your engine is using fuel too fast, you could run out of fuel short of your destination.

Cruise Enroute

Once you have attained our cruising altitude, you may engage your autopilot or maintain altitude and heading manually. Be sure your cowl flaps are closed whenever cruising. They are not needed, and they increase drag.

With PVD being at Green State Airport, you will fly over this commercial airport for Providence, Rhode Island and this corner of New England. At your 6,000 feet MSL altitude, you will fly over the airport's airspace, which rises to 4,100 feet (1,250 metres) MSL, so ATC contact is not required.

At PVD, turning left 16 degrees and head 279 along the next leg of this airway, as shown on the chart.

For this leg, the wind will be a mild northeast tailwind gently pushing you along and toward your left for the remainder of the enroute portion of your flight. This push will shorten the duration of your flight slightly. At our 180-knot cruising airspeed, this 51-mile leg should last about 17 minutes.

Check your fuel supply enroute. If you estimated fuel needs accurately and embarked with the required amount, you should have plenty of fuel to reach your destination. Fuel supply should not be a problem on short flights; but if your calculations were wrong, or your engine is using fuel faster than expected or your aircraft is leaking fuel, you could run out short of your destination. Look for an emergency airport if necessary.

Between PVD and HFD, you will fly over the few 'rural' areas of southern New England. Although not urban like Providence and Hartford, this area is more densely populated than rural areas of other states, so there are plenty of airports nearby. Also, this airspace is very congested with general-aviation and commercial traffic, so be extra careful to stay in your airway and at your cruising altitude throughout the flight.

Descend towards Hartford

The instrument approach chart for KHFD's runway 2 shows that we should fly the holding pattern at an altitude of 2,500 feet MSL (763 metres). To descend gradually so that we can be at this altitude when we arrive at this point, we should start descending about 11 miles ahead and descend steadily at about 750 feet per minute. This descent point can be determined by a simple formula: descent altitude x 0.003. For example, we are cruising at 6,000 MSL and we need to descend to 2,5200 MSL, so our descent altitude is 3,500 feet (1,068 metres). By multiplying 3,500 feet times 0.003, we arrive at a distance of 10.5 miles. For a cushion, we will round this distance to 11 miles.

With HFD being only about three miles ahead of HF on our course, we can simply start our descent when we are eight miles from HFD according to our DME.

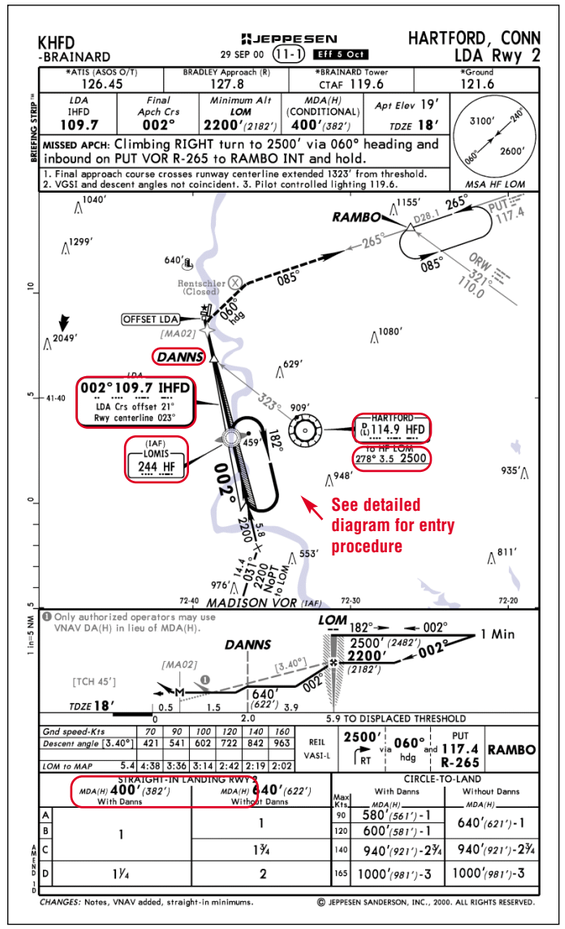
Tune KHFD's ATIS at 126.45, as shown on the chart, and listen to its report while you are descending toward the approach procedure.

APPROACH HARTFORD BRAINARD

As you get closer to the airport, readjust your altimeter for local pressure, turn on your landing lights, switch to the tank containing the most fuel, adjust the propeller and fuel mixture as needed, and check your fuel quantity again. If you are dangerously low on fuel, request emergency landing procedures from ATC. Otherwise, follow the published approach procedure. If you have been using the autopilot, disengage it now.

The approach chart for Hartford Brainard shows that approaches are controlled by Bradley International Airport, which is about ten miles north of Hartford Brainard. Pilots would therefore contact Bradley approach control at 127.8 for guidance and clearances through the instrument approach procedure, then the Hartford Brainard tower at 119.6 during final approach.

TIP: *Make a flight/situation here so you can repeat the LDA approach for practice without having to fly the entire course from New Bedford each time.*



The approach to Hartford

Enter the Holding Pattern

The correct procedure for entering a holding pattern from this direction is to fly to the anchor, turn left and head outbound along the non holding side, then execute a teardrop turn and return to the anchor (see our diagram.) Maintain the 2,500-foot (763-metre) prescribed altitude throughout this pattern. All turns in holding patterns should be co-ordinated standard-rate turns. A manageable holding airspeed for this aircraft is 120 knots.

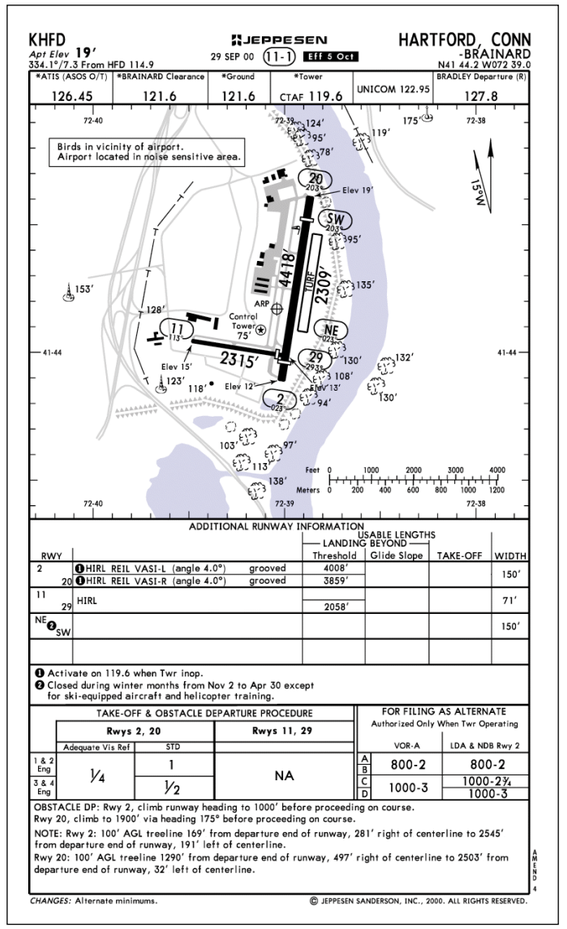
Upon entering this holding pattern, the flight simulator GPS course guidance will no longer be valid. Therefore, disengage the navigation feature of your autopilot if you have been using it, and ignore the course line on your GPS screen.

Pause any time you need to. You won't have any co-pilot or flight instructor to help you fly the aircraft and perform these tasks during this demanding approach.

The anchor for this holding patter is HF, so after you pass HFD, head directly for HF. Use your ADF for guidance. You will know you're at HF when any of these things happen:

(1) Your ADF needle swings to the opposite direction, (2) your middle-marker warning sounds, and (3) your GPS screen shows your position at this NDB. When you reach HF, turn left and head 182 outbound along the nonholding side. Note the time that you start heading 182, because you will enter your teardrop turn one minute later.

After one minute, execute a left teardrop turn by turning left approximately 200 degrees and heading back to HF.


KHFD
Apt Elev 19′
334.1°/7.3 From HFD 114.9
JEPPESEN
29 SEP 00 (11-1) Eff 5 Oct
HARTFORD, CONN
-BRAINARD
N41 44.2 W072 39.0
*ATIS (ASOS O/T) 126.45
*BRAINARD Clearance 121.6
*Ground 121.6
*Tower CTAF 119.6
UNICOM 122.95
BRADLEY Departure (R) 127.8
Birds in vicinity of airport.
Airport located in noise sensitive area.
Elev 19′
ARP
Control Tower 75′
4418′ x 150′
2309′
2315′
Elev 15′
Elev 12′
Feet 0 1000 2000 3000 4000
Meters 0 200 400 600 800 1000 1200
ADDITIONAL RUNWAY INFORMATION
RWY
USABLE LENGTHS — LANDING Threshold / BEYOND Glide Slope / TAKE-OFF
WIDTH
2 ❶HIRL REIL VASI-L (angle 4.0°) grooved 4008′ 150′
20 ❶HIRL REIL VASI-R (angle 4.0°) grooved 3859′
11 29 HIRL 2058′ 71′
NE ❷ SW 150′
❶ Activate on 119.6 when Twr inop.
❷ Closed during winter months from Nov 2 to Apr 30 except for ski-equipped aircraft and helicopter training.
TAKE-OFF & OBSTACLE DEPARTURE PROCEDURE
Rwys 2, 20
Rwys 11, 29
Adequate Vis Ref
STD
1 & 2 Eng
3 & 4 Eng
¼
½
1
NA
FOR FILING AS ALTERNATE
Authorized Only When Twr Operating
VOR-A
LDA & NDB Rwy 2
A 800-2 800-2
C 1000-3 1000-2¾
D 1000-3
OBSTACLE DP: Rwy 2, climb runway heading to 1000′ before proceeding on course. Rwy 20, climb to 1900′ via heading 175° before proceeding on course.
NOTE: Rwy 2: 100′ AGL treeline 169′ from departure end of runway, 281′ right of centerline to 2545′ from departure end of runway, 191′ left of centerline.
Rwy 20: 100′ AGL treeline 1290′ from departure end of runway, 497′ right of centerline to 2503′ from departure end of runway, 32′ left of centerline.
CHANGES: Alternate minimums.
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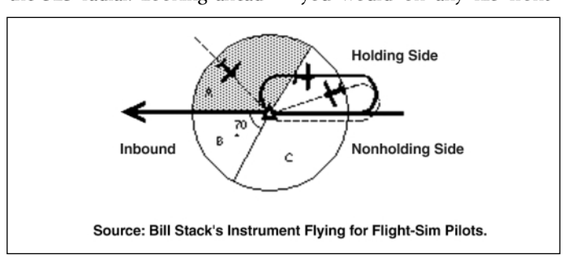
Hartford Airport diagram

Once you return to HF, turn right about 200 degrees and head 182 outbound along the holding side. Note the time that you exit this turn, because you will enter the next turn one minute later.

During the one-minute duration of this leg, perform the following four tasks: Switch your Nav1 radio to 109.7 for the LDA signal, adjust your OBI1 to 002 for the LDA, switch your Nav2 radio to 114.9 for HFD VOR, and adjust your OBI2 to the 323 radial. Looking ahead on the approach procedure, you will use this 323 radial to know when you are at the fix named DANNS.

After one minute, turn right 180 degrees and head straight for HF. If you executed these two turns properly, you should be heading 002 and headed straight for HF. During the one-minute duration of this leg, perform the following two tasks: Descend to 2,200 feet (671 meters) MSL, and align with the localizer beacon as you would on any ILS front-course localizer. Once you are aligned with the LDA course, you will fly right over HF on your way in.



Source: Bill Stack's Instrument Flying for Flight-Sim Pilots.

Parallel entry to a holding pattern

The 040 wind will affect your precision in this holding pattern by pushing you toward the southwest, so adjust course as necessary. It will push you toward the right while you are headed 182 toward the left while heading 002.

Follow the LDA Course

Once you pass HF, reduce your airspeed to 90 knots. If you go in too fast, you will not descend soon enough for the altitude step-downs, and you will not be able to control your aircraft during the right turn to come.

Follow the LDA course as normal for any front-course localizer approach. The 040 crosswind will push you toward the left throughout this approach. As you get closer to the localizer transmitter, your deviation from the course will get more pronounced. Adjust your heading gently, or you will steer yourself off the course.

Notice that the glide slope bar does not appear on your OBI. Without a glide slope, you must follow a couple of step-downs on the approach. When you pass HF, descend to 640 feet (195 meters) MSL as shown on the profile view. You should be at this altitude when you cross DANNS – no lower and no higher. Being at 640 feet before you arrive at DANNS is all right, but arriving at DANNS higher or lower than 640 feet is not.

DANNS will be shown on the GPS window. Without GPS, the only way of knowing its location is by triangulating the localizer and the 323 radial of HFD. So when your OBI2 reads 323 from HFD and you are along the runway 2 localizer on OBI1, you will be at DANNS.

At DANNS, descend to no lower than 400 feet (122 meters) MSL, as shown on the approach chart's landing-minimums table.

To fly the remainder of this approach visually in the Mooney Bravo IFR model in FS2000, you will need to switch back and forth between the full screen and panel windows using the W key.

When you see the runway centreline ahead of you, turn right 20 degrees and head for the runway. Being more than 1,000 feet away, you will have plenty of room for adjustments before you get there.

How will you know when you are getting near the runway centreline? This is one of the significant challenges of LDA approaches. Your ability to meet this challenge comes with flight experience and LDA practice. Also, this challenge is another sound reason that instrument pilots must also know how to fly visually! Our tip for this approach is this: When the runway appears in the centre of your right-front window, turn toward it for landing.

When you see the runway and are well aligned with it for a safe landing, you can descend below the landing minimum and proceed with your landing. Of course, if you cannot see the runway ahead or you are not properly aligned with it for a safe landing, you must execute a missed approach.

MISSED APPROACH?

The missed approach procedure calls for turning right, heading 060 and climbing to 2,500 feet (763 metres MSL). The chart shows that you will head inbound toward Putnam VOR (PUT, 117.4), so change your Nav1 or Nav2 radio to this VOR and track it on the appropriate OBI. When you intersect PUT's 085/265 inbound radial, turn right 25 degrees and head 085 toward this VOR. At the RAMBO fix, fly the shown holding pattern. RAMBO is at the intersection of PUT's 085/265 radial and the 141/321 radial of ORW VOR (110.0), so track ORW on the radio and OBI that you are not using for PUT.

CONGRATULATIONS

You have successfully landed at an airport using an LDA approach. Well done, indeed!

Keep flying this tutorial to build your proficiency. Apply stronger winds and turbulence and advance to more sophisticated aircraft to make it more challenging if you like. For more information about navigation and instrument flying, read Bill Stack's Flight-Sim Navigation and Instrument Flying for Flight-Sim Pilots

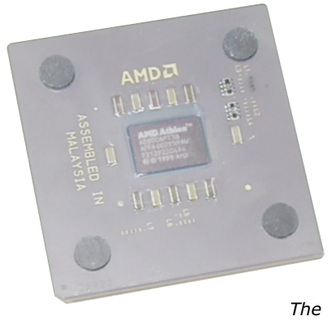
See you next time. ■

Bill Stack

SIMPLY THE BEST!

The ultimate flight sim shopping cart

The past 18 months have seen a lot of hardware pass through the PC Pilot labs, most of which has been a pleasure to use and little of which we would condemn outright. In this special feature we've selected the best of the best to provide you with a list of what we consider to be the finest hardware for our fantastic hobby. It's worth bearing in mind one of the cold, hard facts of computer hardware testing - not everyone may experience the same results that we did with particular components. Electronic circuit boards, chips, capacitors and all the pieces that constitute a PC component are not necessarily clones of one another. One CPU may overclock from 800MHz to 1GHz without a hitch, while another supposedly identical one,



The Athlon Thunderbird

purchased from the same company on the same order may not go beyond 850MHz. This we have actually seen first hand. The point being this - be cautious about cursing hardware testers if difficulties arise with something they raved about. We've also heard from many readers who've been given some pretty suspect advice by their suppliers. One example is from a reader who had problems with his yoke and stick combination and was advised that changing his processor down from 1 GHz to 800Mhz would solve the problem. We may be missing something in the translation, but it does sound a bit like a builder suggesting a new patio to cure a leaky roof.

Here then, are our recommendations in the top five hardware categories that will have the most effect on your simulation experiences:

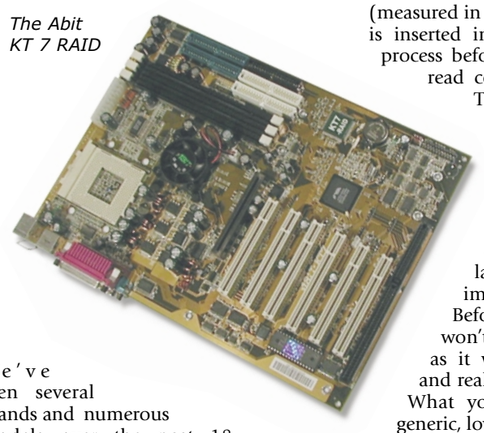
Processors

AMD's powerful Thunderbird CPU is easily the top choice when it comes to 3D gaming, and flight simulators magnify the superior architecture of the second generation Athlon. The 200MHz bus clock (data rate between the CPU and the main chipset) coupled with 256Kb of full-speed level 2 cache provides the T-Bird with all it needs to leave the Pentium III in the dust. Perhaps the most astonishing part of this is the affordability factor. Thunderbirds are currently priced 20-30% lower than Intel's equivalent, which continues to baffle us.

Main Board

At least as significant as the CPU, the motherboard is the foundation of any system and ultimately determines overall system stability. The core logic chipset, CPU interface, expansion slots, and memory slots are but a few of the items that motherboards provide housing for. So why does it seem this item is taken so lightly by OEM manufacturers? A fine question to ask, but in the end, you will want to dump that generic, performance confining plank of a motherboard for something better.

The Abit KT 7 RAID



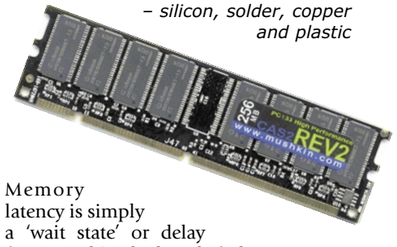
We've seen several brands and numerous models over the past 18 months. ABIT, ASUS, and MSI are, in our humble opinion, the top brands to shop for. AMD Athlon users can do no better than the KT7A from ABIT, whilst Celeron/Pentium III owners are advised to examine ASUS' CUSL2 board.

In this scenario, since we have selected the Athlon Thunderbird as the best CPU, we recommend the KT7A motherboard from ABIT as its reliable partner. ABIT's famous proprietary Softmenu III BIOS are without doubt the most user friendly on the planet, allowing its owner to extract every ounce of performance from the system.

Memory

Although we haven't published any detailed memory comparison (up to now), we have experienced several brands of PC133 modules and ascertained what specifications offer the highest degree of performance and stability. Let's first explain in as plain English as we can, the most crucial timing parameter of RAM, commonly known as CAS latency.

Memories are made of this – silicon, solder, copper and plastic

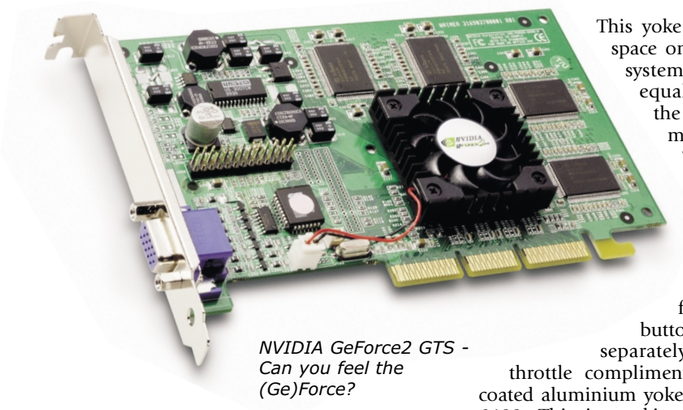


Memory latency is simply a 'wait state' or delay (measured in clock cycles) that is inserted into the memory access process before it begins to carry out a read command after receiving it. Thus, the lower the latency, the faster the transaction. The CAS (Column Access Strobe) is used substantially more often than the RAS (Row Access Strobe) and therefore the latency factor has significant impact on 3D performance. Before your eyes glaze over, we won't be explaining CAS and RAS as it would occupy many pages and really isn't critical information. What you need to know is that generic, low-budget memory is rated at CAS 3 (3 wait states), while premium RAM modules are CAS 2 (2 wait states) rated. This setting can be changed in the system's BIOS menu on most motherboards. Now, this may look insignificant, being only 1 digit lower in timing, however you can be assured of an instant 5-8% increase in frame rates over the slower setting, which is where the real interest lies for flight simming.

You will pay 25-35% more for memory capable of handling CAS 2, but with SDRAM so amazingly inexpensive, there is really no reason to buy the cheap stuff. Think Micron, Corsair, and Mushkin when you shop for quality memory and remember, PC133 rated to a CAS latency of 2 will rock your system.

Graphics Cards

There was a time (not long ago) when video cards played key roles in flight simulation performance. With the arrival of Flight Simulator 2000, Fly!, and X-Plane, the CPU found itself in an unfamiliar leadership role; it alone determined overall performance while amazingly, graphics cards moved down to third place behind even memory. The GeForce2 GTS and Voodoo5 5500 cards finally brought to the table some welcome features and a bit more performance for simmers, along with full-scene-anti-aliasing. With the demise of 3dfx, it seems the next generation battle will come between ATI and nVIDIA. Still, this is a list of what we consider as the best hardware, right now, regardless of circumstances or cost. So that being said, we award first place to the extinct 3dfx and their Voodoo5 5500. While this may raise a few eyebrows, the facts are that the dual VSA-100 chips, along with some excellent drivers, give simmers the best full-scene-anti-aliasing around. The release of the next generation nVIDIA chip, the GeForce 3 may prove to be its equal (or better), but for now Voodoo5 is the clear-cut victor. Beyond that, Voodoo5 also offers stellar performance if one chooses to disable anti-aliasing.



NVIDIA GeForce2 GTS - Can you feel the (Ge)Force?

This selection requires a bold asterisk however, due to the non-existence of 3dfx (their assets have gone to nVIDIA) and subsequent potential lack of technical support should trouble arrive. If you've got one, you made a good choice, if you can get one, we'd recommend it (with a warning on support), but if you can't, it makes sense to mention our second choice, the GeForce 2 GTS.

Flight Controllers

For pure flight simulation (non-combat) we grant the top slot to the Precision Flight Controls AFSC II. The original distributors, AETI, Have changed their name to Vmax Systems since we reviewed it, but our comments are still pretty valid: "every so often we come across something brilliant, something that makes our jaws drop, our breathing quicken, and our heads to sway as we look with amazement. AETI's Advanced Flight Control System II is just such an item, a flight controller that greatly impressed us through hours of testing. This is no-compromise hardware and will so elevate your simulation experiences you may need someone to haul you off to bed, work, or whatever you might be late for. "

Cirrus Flight Pedals

This yoke still occupies space on one our test systems. Without equal it provides the user with the most realistic 'big jet' feel in a desktop controller. Four two-way rocker switches, four push buttons and a large separately mounted throttle compliment the powder coated aluminium yoke, all for about £400. This is working from current exchange rates and adding VAT.

Flight controllers also means rudder pedals and PFC once again takes home the gold. The Cirrus Flight Pedals are every bit as impressive as the yoke they are intended to mate with. Authentic looking, comfortable, and the best performing

Logitech Wingman Strike Force 3D

pedals anywhere, these can arrive at your doorstep for about £400.

As far as combat fans are concerned, the best joystick around has got to have Force Feedback and for us the Logitech Wingman Strike Force 3D is a winner. It's well made, with plenty of functions, the FF is realistic and with a bit of shopping around you could get a bargain. We've seen prices ranging from £59.00 to £85.00, so look before you lock on.

The icing on the cake

Although not essential for accurate flying, there are a couple of other items worth thinking about to enhance the pleasure as you soar through the clouds with your PC.

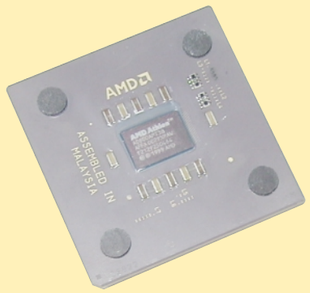
With the high quality of sounds available in many modern add-ons, you need a good speaker system to get the best out of them. Without doubt, the finest PC speaker system we have ever seen is the VideoLogic Sirocco Crossfire. This system is so good it's used by recording studios and could make your hi-fi system redundant. It looks fantastic and at a shade under £250.00 it's pretty good value if you use it as a music system as well as making your flight sim sound the business.

If you're new to flight simming, the novelty of hopping around the keyboard and getting the various functions to work by keystrokes is probably great fun in the beginning. However, after a while it becomes a bit tedious and you start looking round for something that will keep your hands on the controls, not on the keyboard. This is the point in your simming career when you need a GoFlight GF45 Display. This neat little unit can be set up to control any of the NAV, COM, ADF or Transponder frequencies and you can add them together to make a complete radio stack. ■

Greg Gott

THE PC PILOT TOP TEN

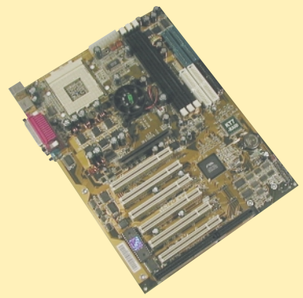
CPU



AMD Athlon Thunderbird 1 GHz

Manufacturer:	AMD
Website:	www.amd.com
Price:	£160.00

MOTHERBOARD



ABIT KT7A

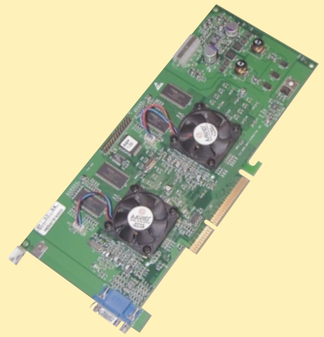
Manufacturer:	ABIT
Website:	www.abit.com
Price:	£105.00

MEMORY

Mushkin High Performance REV2 PC133 222

Manufacturer:	Mushkin
Website:	www.mushkin.com
Price:	£120.00

GRAPHICS CARDS



3dfx Voodoo 5 5500

Manufacturer:	3dfx
Website:	www.3dfx.com
Price:	£120.00 (if you can get one)

GeForce 2 GTS

Manufacturer:	nVIDIA
Website:	www.nvidia.com
Price:	£205.00

CONTROLLERS

AFCS II Yoke & Throttle

Manufacturer:	Vmax Systems
Website:	www.simpilot.com
Price:	£400.00 (approx)

Cirrus Flight Pedals

Manufacturer:	Vmax Systems
Website:	www.simpilot.com
Price:	£335.00 (approx.)

Logitech Wingman Strike Force 3D

Manufactuer:	Logitech
Website:	www.logitech.com
Price:	£89.95

SPEAKERS AND DISPLAYS

VideoLogic Sirocco Crossfire

Manufacturer:	VideoLogic
Website:	www.videologic.com
Price:	£235.00

GoFlight GF45 Display

Manufacturer:	GoFlight
Website:	www.goflightinc.com
Price:	£79.95

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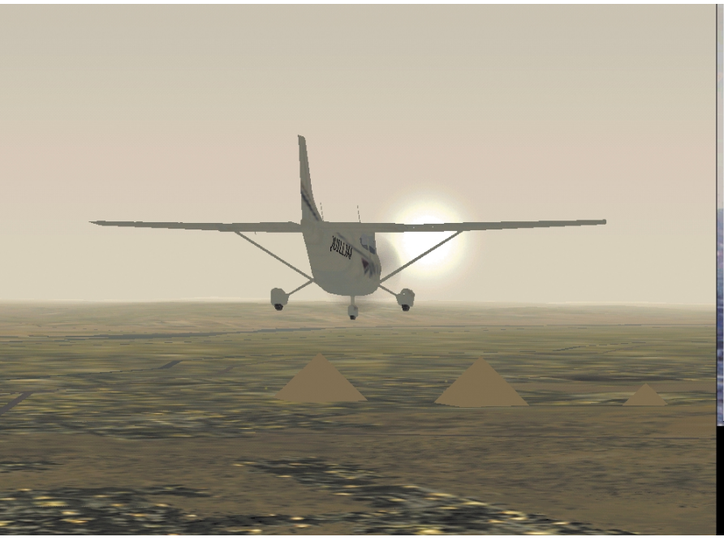
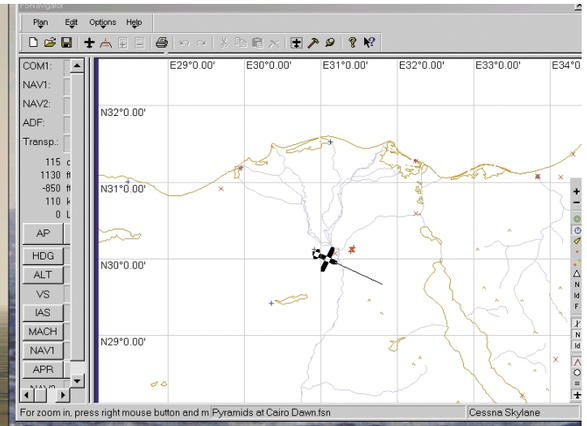
www.flight1.com

Flying with Double Vision





If you can't guess where you are when you see those pyramids, a quick glance at the FSNavigator screen shows the Nile Delta ahead

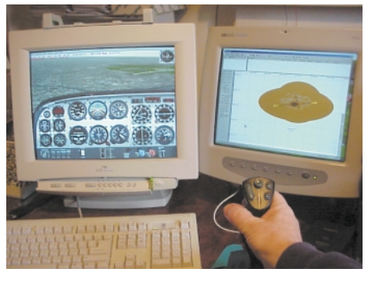
PC Pilot writer recommends split personality!

When Katy Pluta first wrote about using two monitors in Issue 4, we decided to see if it was as easy as it sounds for anyone with a spare half hour and average expertise to do a DIY double-up. The Matrox G400 card may be ageing now, but it is still in daily use with many readers and the results we got were pretty impressive. Even better news is that Matrox have come up with a new Dual Head Graphics card, the G450, selling at under £150. We'll be looking to review one of these in the near future, but in the meantime, the old 400 can still perform some impressive tricks.

Getting hold of another monitor these days is not all that difficult. So many people have abandoned their 14 and 15-inch screens, that there is something of a glut in some second hand stores, office cupboards or even skips (yes, we even rummage down dustbins to bring you the best possible value!) The size of your second monitor does not really matter, just make sure it is up to date enough to do the job and that you have the relevant drivers present. Windows will usually provide them for you.

Just in case you haven't read Issue 4, let us remind you how to get the two monitors working properly. With the Matrox G400 graphics card and software installed, you will now have an extra monitor socket at the back of your computer. Connect your number two monitor to this and switch it on. Then just click on the Display icon, choose Display Properties and then select Settings. You should see two screens labelled 1 and 2 in the Settings window. Follow the directions that will set them up to look like your own two screens. We recommend making them both the same size and both 1024 by 768 pixels, at least to begin with. Tick the sentence that says 'Extend my windows desktop onto this window'.

Click on the Advanced button. Remember that in Windows 'advanced' does not mean that it is intended only for rocket scientists, it just indicates more options. Select 'DualHead MultiDisplay' for your flight simming and tick the PAL system if you live in Europe. (You might want to connect to a TV screen one day). Click on all the OKs that you need and your second monitor will come up showing the same background wallpaper as your main one. You can move the mouse pointer and see that you have, in effect, a large wide monitor. If you want to have both monitors showing the same view of the simulator, then you need to select 'Dual Head Clone'.

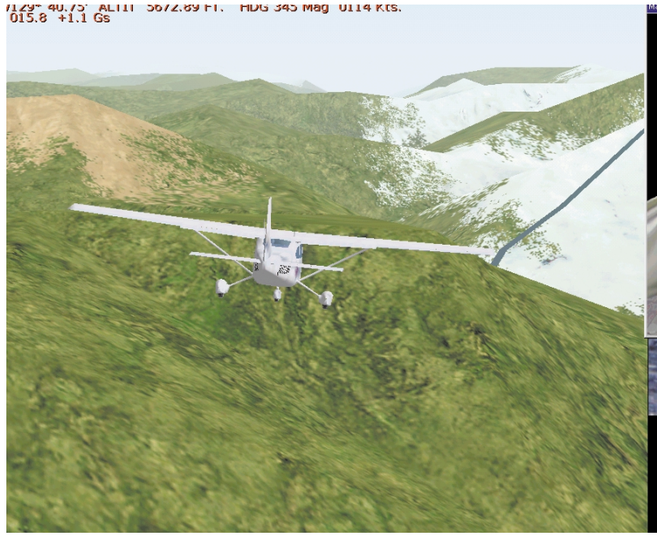


Using FSNavigator to land at Bournemouth

A small word of warning here. The connection of a second monitor may affect your printer driver, so don't be too surprised if you need to re-install it. Some printers need to be aware of the extra window.

Fire up Flight Simulator 98 or 2000 and start to play about with what you have created. You will need to use the right hand mouse button to select 'undock window' in order to move parts of the screen over to the second monitor. Then you will see the great advantages of double vision. If you want to try other flight sim programs, have a look at which windows are undockable. Trial and error will probably get you further, though if all else fails, read the manual.

Perhaps the most obvious move is to have a map view on the right whilst flying around. Unfortunately, the inbuilt map utility for Flight Simulator 2000 freezes the action when selected, so is no use for this. But, if you have



This little trip to Canada was made a lot easier with two screens available – instruments, GPS and the great outdoors!

Approaching Old Sarum – the real one's on the right

downloaded the excellent and unbeatable FSNavigator by Helge Schroeder from *http://members.xzoom.com/fstools*, this will sit nicely in your second screen and you can watch yourself happily proceed across the world in complete control, on autopilot or even land on a runway in thick fog. The GPS will undock and move over too, plus you can drag it out to be as large as the second screen will allow, which makes it much easier to read. The radio/comms panel is also very handy on the second screen. We found that the top down view window in Flight Simulator 2000 will move over too but does not stay dynamic. It behaves rather like a screenshot and freezes.

Undocking your instrument panel however, and dragging it across to screen No 2 leaves your original screen open for a wide view. This is a particularly useful feature for practising landings, especially by night. Don't forget that you can drag on all four edges of the windows to make them larger, even to fill the screen completely. If your eyesight is less than 20/20, it can make life a lot easier to enlarge the map or the GPS. It is also fun to have the cockpit view on one side and a spot view on the other. This is especially helpful when practising aerobatics. We recommend the Grand Canyon as the best venue for this!

If you happen to be able to fly for real as well as simulating, then it is both fun and instructive to make a digital video of a local flight and play it on one monitor while following along the same route and height in the simulator of your choice on the other. We tried comparing views of the Isle of Wight with some add-on scenery for Flight Simulator 98 that comes up with a reasonably accurate picture of the Needles.

You can fly and watch a DVD at the same time if you feel the need and we even wrote this article on one screen while testing our theories on both! How on earth did we manage before? ■

Christopher Jarman

The Needles in Flight Simulator 98 using add-on scenery compared with our own video running on the right hand screen

Virgin Atlantic Boeing 747-400

Teach yourself Jumbo

PLATINUM COLLECTION
London Heathrow International Airport to San Francisco, United States of America
Captain Alan Carter and First Officers Allan Rattigan & John Cullom with virgin atlantic
Boeing 747-400

Captain Alan carter - Ruby Tuesday is in safe hands

The engine start begins. No need to pull the choke out!

We've reviewed videos from ITVV's Platinum Collection before, but in case they're a new name to you, ITVV stands for Intelligent Television and Video. You won't have seen any of their fantastic cockpit videos on TV, but at more than two hours duration, they are longer than most feature films. ITVV specialise in on-board videos of airliner flights and will typically follow a designated flight from planning through take off, cruise and landing. Experts in their field, ITVV use up to six video cameras from a wide variety of angles to capture all the procedures as they happen in a cockpit and commentary is provided by the captain and first officers, rather than a narrator. They're available in most formats and so are compatible with UK, US and European TV systems.

If you've ever taken your own 'movies' using a camcorder, you might be forgiven for thinking that what you get will be two hours of jerky pictures (mainly of the floor and ceiling) with a soundtrack that sounds like it's coming from under the bedclothes. However, nothing could be further from the truth. The commentary and background is in pin-sharp stereo and the film is professionally shot, with neat touches such as overlaying a 'ghost' image of a checklist onto the film of the pilot and first officer as they go through the same checklist.

The Virgin Atlantic 747-400 is one of ITVV's latest releases and it follows flight VS19 in 747-400 G-VXLG 'Ruby Tuesday' from London Heathrow to San Francisco. It begins with a complete explanation of the pre-flight preparations from the crew despatch office. This is so comprehensive that you begin to wonder if you'll ever see a plane. All the flight plans, fuel calculations and charts are explained and if you've tried getting to grips with a 747-400 in a flight simulator, you'll see how much work goes in before anyone even climbs aboard. Captain Alan Carter, who takes us through these complex procedures, is clear, concise and an engaging speaker.

When everything is prepared, he takes us out to the aircraft and we go through all the pre-flight checks and checklists with first officers Allan Rattigan and John Cullom. We won't spoil the film by giving away the plot, but suffice it to say that the flight to San Francisco is fascinating and the landing is not to be missed.

At £21.95 this is nearly twice the price of a regular video, but if you're interested in airliners it's an absolute must. The quality is superb and although there's no car chases, CGI animation, or a 'love angle', this film is so good that after watching it a couple of times, a novice could probably make a reasonable job of flying a Jumbo. That's got to be worth the money if you compare it to the cost of a CPL! ■

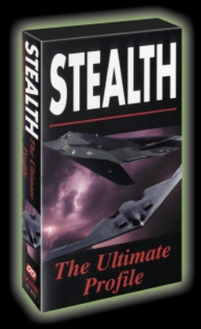
Mike Hodges

REVIEW SCORE:			
Publisher:	ITVV Video	**Price:**	£21.95
Website:	www.itvv.co.uk	**Release Date:**	Out Now

At a glance: Unlikely to get an Oscar, but if they were awarded for quality and professional expertise it would sweep the board. Slightly expensive and possibly too specialist for some people, it's a 'must have' for unravelling the mysteries of how to fly a 747-400. Compulsive viewing for cockpit builders and VA pilots everywhere.

Stealth – The Ultimate Profile

Engage cloaking device!



The incredible B-2 bomber – easily mistaken for something out of Star Trek

Picture the scene. You're glancing through the TV listings and you suddenly notice that there's a great documentary on about flying, but it's been scheduled at 3am on some obscure cable channel. However, you set your video to record it and a few days later settle down to watch, anticipating an aviation treat. That's when you discover you've got 60 minutes of Bulgarian folk music because you selected the wrong channel. Curses!

But, all is not lost. Enter DD Video with a huge catalogue of aviation, military and general interest documentary videos. They've got quite an array of titles on almost every aspect of flying, including feature films and many excellent documentaries from respected sources like the Discovery Channel and BBC's Timewatch.

We took a look at one of their recent releases, Stealth – The Ultimate Profile, a 60-minute film charting the history and development of the various Stealth aircraft from the USA. It starts with an amusing clip from Star Trek, where a Klingon ship uses its cloaking device to surprise a hapless Federation Starship. The emphasis of science fiction becoming science fact is not lost on the viewer and the documentary proper begins with the supersonic SR-71 Blackbird. There is some excellent early footage and interviews with the brains behind this amazing machine. The film then takes us through the development cycle of the Lockheed F-117 Nighthawk, again with some fascinating interviews and insight into the political manoeuvrings behind this huge project. When you see archive film of these aircraft being tested, you can understand where the conspiracy theorists get the idea that the USAF is testing captured UFOs around Groom Lake air force base.

We also learn about the Northrop B-2 Stealth Bomber and there's plenty of amazing night time film of precision bombing from the Gulf War, Bosnia and other conflicts. No mention is made of the Stealth aircraft that was downed in the Balkans, but you certainly get to see more than we were treated to on the news. We're then brought up to date with the latest generation of Stealth weapons, the awesome F-22 Raptor. The film concludes with some very incisive discussion on the future direction military aviation will take, including an interesting point made by a professor of military studies who says that even with such sophisticated technology, air power alone is unlikely to decide the outcome of modern conflicts.

The film is an Aviation Week documentary made for the Discovery Channel, so there's always a chance that you might have seen it before. It also tends to sound like a brochure for the American aircraft industry and if you were trying to sell Stealth bombers to a foreign power, this video should be in your sales presenter. It's fair to say that the production quality isn't up to that of a Hollywood blockbuster and DD videos are only available in PAL VHS format (Europe and UK only, but check their site for a full list of compatible countries). However, for a niche market subject, it makes very interesting viewing and it would certainly stand being watched more than once. ■

Derek Smalls

REVIEW SCORE:			
Publisher:	DD Video	**Price:**	£12.99
Website:	www.ddvideo.co.uk	**Release Date:**	Out Now

At a glance: A bit of a sales brochure for the Pentagon, but fascinating stuff and you're unlikely to see it at a sensible hour on terrestrial TV. Only available in PAL/VHS but good value if this subject interests you.

Now you see me, now you... bang!

The Battle of Britain

Having recently read a number of books on the Battle of Britain, published for the 60th anniversary, we didn't expect to encounter much new information. Jon Lake's work, however, was a pleasant surprise and filled in many blanks with information like the Order of Battle for the RAF in July 1940.

In fact, Lake has succeeded admirably in bringing a new work on this much-discussed conflict to the table. Well illustrated and with an excellent balance of subject matter, the volume captured our attention, even when speaking on matters such as the development of RDF (Radio Direction Finding). The discussion of the Chain Home system and the Observer Corps is one of the best we have read so far, including maps showing the range of the two Chain Home systems at the time of the battle.

Lake's volume is not restricted to the British side of the conflict, though that is his focus. There are many images of Luftwaffe personalities and aircraft, and a lively discussion on the changes in the Luftwaffe from the Spanish Civil War and through 1940. The author has written from the British perspective, while not lacking sympathy for the other side. He shows careful research and is aware of the ongoing historical debates, such as that surrounding the dismissal of Hugh Dowding after the Battle.

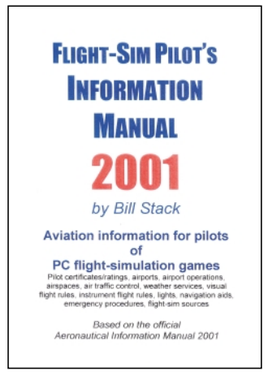
Colour plates abound, in addition to the many photographs. Plates are included for each major aircraft type involved in the Battle, for both sides of the conflict. The volume closes with a detailed record of RAF and Luftwaffe aces, and then an index. Would that more volumes of this nature had such a complete index. Highly recommended! ■

Leonard Hjalmarson

REVIEW SCORE:			
Publisher:	Prospero Books	**Price:**	£14.00
Author:	Jon Lake	**Release Date:**	Out Now

At a glance: Broad coverage of the events and personalities from both sides, and excellent illustrations. Lacks use of first person perspective, which would add colour.

Flight-Sim Pilot's Information Manual 2001


FLIGHT-SIM PILOT'S
INFORMATION
MANUAL
2001
by Bill Stack
Aviation information for pilots
of
PC flight-simulation games
Pilot certificates/ratings, airports, airport operations, airspaces, air traffic control, weather services, visual flight rules, instrument flight rules, lights, navigation aids, emergency procedures, flight-sim sources
Based on the official
Aeronautical Information Manual 2001

When we were learning to fly for real, we would have appreciated a little manual like this one very much. Even though it is aimed only at flight simmers (and this is made crystal clear), much of what is written here also applies to real flying.

Bill Stack's earlier manual, which we reviewed in Issue 5, has been updated and lengthened to 192 pages. Improvements have been made in the references to simming outside the US (which was our main criticism of the 2000 edition). There are over 20 black and white illustrations and the ring-bound A5 design means it will stay flat when opened at any page.

Many of us who number flight simulation among our pastimes, are often to be found in the spare room wrestling with flying problems from the safety of our swivel chairs. This means that the long intensive training of a real pilot and the many ground school exams are missed out. We may not have gained all that background knowledge which helps to make sense of air procedures, rules and conventions of the regular flyer's life. This little manual fills the gaps efficiently and very inexpensively. The PPL (Private Pilot's Licence) alone requires a library of books to be bought and studied. The cost would be around £100 at least. At roughly £12, plus postage, Bill Stack has produced a real bargain.

Open the manual at random and you will find a wealth of useful information on almost any flying subject you need. It is written in good simple and clear English with very little jargon. Plenty of tables are included with aviation terms explained and conversions from imperial to metric measures useful for pilots. The layout and choice of typeface is particularly well chosen.

Bill Stack continually advises flight sim pilots to learn step by step and this is very wise. We have known some simmers who have become very frustrated because they could not control a huge Jumbo in cloud before even trying to fly a Cessna straight and level in clear weather.

This manual is designed to help those using any of the current aviation simulators, not just the most popular. No matter what your favourite sim may be, from Flight Simulator 2000 to X-Plane, you will find just as much help and information here.

The last section gives web-sites and addresses for all kinds of flight simulation resources. These are invaluable, although not all can be completely up to date these days and we were shocked to note that the world's favourite flight simulation magazine doesn't get a mention. Possibly Bill is trying not to feed the hand that bites him!

If our praise seems to be glowing, it is not accidental. We wish we had found this manual years ago. Now we have, it will be beside the monitor, open flat at all times.

Unfortunately, you probably won't find it in many shops, so contact www.topskills.com for details, or call them in Tennessee on (432)-584-7340. You will not be disappointed! ■

Christopher Jarman

REVIEW SCORE:			
Publisher:	Training Associates	**Price:**	£12 (approx.) inc postage
Author:	Bill Stack	**Release Date:**	Out Now

At a glance: An invaluable resource for flight simmers or even real pilots. At the price, it's excellent value, but don't expect a coffee table volume.

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In case you missed them first time...

Back issues of 1, 2, & 3 on CD

Although copies of PC Pilot 1,2 and 3 are no longer in print, we've put all three complete magazines on a great value CD in PDF format, complete with Acrobat Reader. As well as all the articles, reviews and features from the first three issues we're also including eight of our very popular flight sim tutorials and their associated charts. All this from only £7.99

Issue 4

Reviews: Airport 2000 V2, RAF2000, Elite, FlitePro, 3 Great Planes, German Airports 3 (FS2000), Airport Inc., Air Power – Cold War

Features: Advanced Flying, Multiple Monitors, Virtual Airlines, Downloads

Hardware: Graphics Cards

Tutorials: Birmingham to Dublin – VFR & IFR

Issue 5

Reviews: Enemy Engaged (Comanche Hokum), Gunship!, Janes F/A 18, VIP Classic Airliners 2000, Private Wings, Final Approach, FS Design Studio, Tuskegee Fighters, Behind Enemy Lines, Game Commander, Pilot's Information Manual

Features: Under the Cowling (engines), Airport Design, SATCO/IVPA

Hardware: Processors

Tutorials: Dublin to Glasgow – VFR & IFR

Issue 6

Reviews: X-Plane, 747-200, PS1, Radar Contact, VFR Scenery, Glideslope Scenery, Legendary Aircraft, FS Clouds, Private Pilot, 737 for Fly!, 757 for Fly!

Features: Defence Helicopter Flying School, Low Down on Downloads, Control Surfaces

Hardware: Voodoo 5, Speaker multi test

Tutorials: Glasgow to Manchester VFR and IFR

Issue 7

Reviews: : Airbus 2000 SE, Air Power – The Cold War, Aces High, Fighter Ace II, FS Commander, DreamFleet Cssna Panel, Phoenix 777, Phoenix Bonanza, Mad Dog 2000

Features: Cockpit Building, Multi Monitors, Flight Planning, Aircraft Building in Flight Simulator

Hardware: Go Flight GF45, ACP Compact, CH USB Yoke

Tutorials: Manchester to London VFR and IFR, Combat Manoeuvres

Issue 8

Reviews: Combat Flight Simulator 2, Crimson Skies, Proflight 2000, English Airports, German Airports 2, Flight Downunder 2000, Dreamfleet Cessna 172, L-1011 Tristar

Features: Gas Turbines, Laptop Flying, CAA IRT Test

Hardware: Sonic Fury Sound Card, GeForce 2 GTS, Hardware Upgrades

Tutorials: London to Cork IFR (fuel calculation)

Issue 9

Reviews: B17-II, Ultimate Airlines, Battle of Britain, Corporate Pilot, 747-400 Pro, Ibiza 2001, UK2000, Combat Squadron, Airfix Dogfighter

Features: Aerobatics, Combat Sims History, Combat Manoeuvers

Hardware: Joysticks, System Upgrades

Tutorials: Hanscom to New Bedford with a back course

Downloads

May we respectfully recommend . . .

Since we started the download section in PC Pilot we've seen a huge increase in the number of files produced each month. The quality standard also appears to be rising, as users become more familiar with an ever-expanding range of professional utilities, giving us the unenviable task of deciding which files we should include in this section. So, apologies to those that didn't make it and in no particular order, we present the latest notable downloads for you to enjoy.

Lockheed Martin F-16C Falcon — Flight Simulator 2000 Aircraft

Here's an excellent military jet from Dino Cattaneo, the Lockheed Martin F-16C Falcon. Complete with superb external textures and a fully functioning afterburner with transparent flame. It sports a high-resolution 360-degree virtual cockpit and a totally reworked panel, which although essentially still VFR is nicely put together.

Author: Dino Cattaneo

Download From: www.flightsim.com
Filename: f16c5015.zip

Khalifa Airways Airbus A310-300 — Flight Simulator 2000 Aircraft

This A310-300 is based on a Khalifa Airways aircraft, part of a private Algerian airline based at Houari Boumedienne Airport in Algeria. It is a repaint by members of the Project Freeware Group, although the copyright files enclosed in the zip are not clear as to whom we should credit the work.

Author: Project Freeware Group

Download From: www.flightsim.com
Filename: kha3103.zip

Bell 204 UH-1B Huey — Flight Simulator 2000 Aircraft

Modelling helicopters is no mean feat and Dwight Booth should be commended for this rendition of a Bell 204 UH-1B Huey, complete with twin .50-calibre machine guns. There is the facility to do a simulated shutdown and you can run the engine down to ground idle, see the blades become visible, turn the master switch off and they finally come to a halt.

Author: Dwight Booth

Download From: www.flightsim.com
Filename: uh1bguns.zip

MBB BO105 CBS — Flight Simulator 2000 Aircraft

We have another noteworthy helicopter model, this time from the prolific Ian Standfast. The MBB BO105 CBS shown here in the colour scheme of The Baptist Medical Centre Life Flight, Jacksonville, Florida, USA. This helicopter is one of the most agile rotary winged aircraft ever designed, and Ian's model is representative of the original.

Author: Ian Standfast

Download From: www.flightsim.com
Filename: bo105lf1.zip

DC-3 OH-LCH 'Airveteran' — Flight Simulator 2000 Aircraft

This DC-3 model is based on the Douglas R4D-6 NATS model by Jan Visser, with the R4D/DC-3 panel by Bill Rambow and Roy Chaffin. This version is painted in the former Finnish Airlines livery on a highly polished bare aluminium skin. The author offers this model as a tribute to the people of the Air Veteran Association.

Author: Jan Visser

Download From: www.flightsim.com
Filename: dc3ohlch.zip

BAe Hawk T.Mk1 A Red Arrow — Flight Simulator 2000 Aircraft

The unmistakable BAe Hawk is one of the most successful fast-jet trainers in the world. It is still used by the Royal Air Force and many others. The plane depicted here is the Red Arrows XX307, which joined the team in 1996 from HQ CFS. It includes full moving parts, virtual cockpit, transparent canopy with glass reflections and an instrument panel.

Author: Mikko Maliniemi (repaint by Owen Hewitt)

Download From: www.flightsim.com
Filename: rdarrw.zip

P-51D "Red Tail" Mustang — Flight Simulator 2000 Aircraft

Another unmistakable aircraft from Roger L. Dial, based on the P-51D Mustang of Lt. Roscoe Brown Jr. one of the famous Tuskegee Airmen who had the distinction of never losing a bomber that they were escorting in air-to-air combat. Roger's superb design work is complemented with textures by J-P Demmerle and sounds by Mike Hambly.

Author: Roger L. Dial

Download From: www.flightsim.com
Filename: p51rbtus.zip

Boeing 767-400 — Flight Simulator 2000 Panel

This updated panel is based on an original bitmap by Eric Ernst using Tony D'Ambrosio's excellent shareware Real-CRT Gauges and also some freeware HGHB and FPDA Gauges. If you have Airport 2000 Volume 2 aircraft installed the author has also included the checklist gauge from that product. It won't work without Airport 2000, though.

Author: Michael Gallagher

Download From: www.flightsim.com
Filename: 767ultmp.zip

London Heathrow — Flight Simulator 2000 Scenery

Gary Summons superb rendition of this major UK Airport includes an advanced docking system airbridges, accurate buildings, a full compliment of parking bays, oil slick effects, night effects, dozens of static aircraft and even passengers, all combined with a decent frame rate. The package is 30-day functional shareware that costs about £10.

Author: Gary Summons/UK2000 Scenery

Download From: www.flightsim.com
Filename: egll1.zip, egll2.zip, egll3.zip, egll4.zip

EGFF Cardiff, S. Wales — Flight Simulator 2000 Scenery

You may recall we featured Cardiff airport in our review of FS Design Studio and John Walker has created his own version (which is quite a lot better than ours). Complete with all major terminal buildings, the British Airways maintenance depot and fuel tanker terminal alongside the main runway.

Author: John Walker

Download From: www.flightsim.com
Filename: crdf2kv1.zip

Bankstown Rwy11C — Flight Simulator 2000 Lesson

In this IFR lesson you have to fly a non-precision NDB approach in a C182 at one of the world's busiest general aviation airports, Bankstown NSW, Australia. Designed for the advanced pilot to test his skills under the glare of an instructor. It is a complete package with maps, approach plates, the adventure code and ATC with Rick Carroll, a real controller.

Author: Fermin Fernandez

Download From: www.avsim.com
Filename: ysbk11c.zip

AirFleet Manager — Flight Simulator 2000 Utility

AirFleet Manager is an FS2000 utility that allows you to manage all the aircraft you've downloaded by organising them into different categories that you can choose. In this way only a limited amount of models stay in the FS2000 Aircraft folder, making the selection of aircraft faster and more logical.

Author: J P Pecheux

Download From: www.avsim.com
Filename: rdarrw.zip

Super Flight Planner 2.7.2 — Flight Simulator 95, 98 & 2000 Utility

There are plenty of flight planners on sale but here is an advanced freeware flight planner that incorporates a Moving Map, Scenery Viewer and an Adventure Maker, suitable for FS95/FS98/FS2000. It can create adventures using its own engine or, if you have it, for Radar Contact. It can also export data to plenty of other GPSs, Moving Maps etc.

Author: Alessandro Antonini

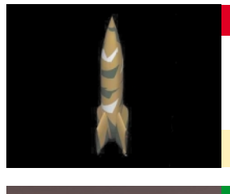
Download From: www.avsim.com
Filename: sfp272.zip

BETA Cargo Boeing 707-320B — Flight Simulator 98 Aircraft

This 707 model for FS98 by J-Planes is the collaboration of a number of people, featuring maximum moving parts, night lighting, improved handling and realism. Every knob, switch and light in the cockpit works, complete with mechanical digital readouts, sun glints relating to time of day and heading and authentic, digitally optimised, 707-320B sounds.

Author: J-Planes

Download From: www.flightsim.com
Filename: j707.zip

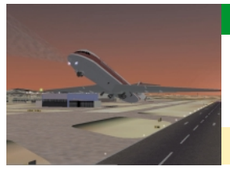


V2 Rocket — X-Plane Aircraft

Not an aircraft by anyone's definition, but there are some very unusual freeware designs for X-Plane and here's an example of one of the most unique. The Saturn V rocket can trace its origins back to the V2 and it was the pioneer of the missile age. The author stresses that a look at the readme file is essential!

Author: Curt Reimer

Download From: www.x-plane.org/registry
Filename: V-2



Air Canada DC930 — Fly! Aircraft

An excellent DC9 for Fly! in Air Canada livery. Panel by Roberto Vigetti (with some of Paul Golding's gauges). The flight model was adapted from an original MD83 by Doug Moldenhauer.

Author: Roberto Vigetti

Download From: www.avsim.com
Filename: fly_dc930.zip

Product Listings

Our comprehensive round up showing our favourites from the many products we've evaluated over the months. Please note that the prices indicated are the RRP where available, but remember the dreaded VAT. Be sure to check for bargains at your favourite sim emporium as there are always savings to be made!

CIVIL SIMS

Elite 6.0

Undoubtedly the best IFR procedural trainer there is. So it should be, the frightening price will put off all but the truly serious - the full kit can cost £695 or more with the new scenery add-on.

Initiative Computing £249.95 — **www.flyelite.com** — **Featured:** Issue 4

Flight Simulator 2000

Despite much publicised criticism over poor frame rates and misleading PC requirements, this still seems to be the benchmark sim. An awful lot of sim for the money, but invest in a decent PC before buying.

Microsoft £49.99/£69.99 — **www.microsoft.com** — **Featured:** Issue 2

X-Plane

Not for beginners or casual flyers, but definitely the 'thinking man's flight sim' - it's even compatible with a Mac, you can fly on Mars (among other places) and we loved the flight model. It also gets regular updates so Internet access is a must.

Laminar Research £75.00 (approx) inc. postage — **www.x-plane.com** — **Featured:** Issue 6

Precision Simulator 744

A no compromise and no-frills approach to flying a Jumbo Jet. No pretty scenery or advanced terrain but probably as close as you'll ever get to the real thing without a trip to a full motion airline simulator

Aerowinx £189.99 — **www.aerowinx.com** — **Featured:** Issue 6

Airline Simulator 2

Some of the best airline flight modelling around with accurate procedures (its been designed by real airline pilots over many years). Unfortunately not for the faint of heart - old DOS interface and daunting controls a real put-off. A lot cheaper these days, so maybe worth a look.

Just Flight £49.99 — **www.justflight.com** — **Featured:** Issue 1

Airport Inc.

Take a rest from flying and show BAA how they should really run Heathrow. Fun, yet ultimately limited airport management game. Worth a look if that's your bag.

Take 2 £29.99 — **www.take2games.com** — **Featured:** Issue 4

FlitePro

Offers a wide range of training features for the IFR pilot, yet reasonably affordable. Low frame rate for instruments detracts from its overall appeal.

Jeppesen £99.99 — **www.flitepro.com** — **Featured:** Issue 4

Fly!

Overshadowed by Microsoft's mighty sim, Fly! has gathered a loyal following. Thought to be better than its rival and some excellent add-ons (and patches) enhance the appeal from when we originally rated it. Available at less than £10 in some stores so a true bargain!

Take 2 £39.99 — **www.iflytri.com** — **Featured:** Issue 1

COMBAT

Combat Flight Simulator 2

Quite simply the best all round WWII flight simulator there is. However, make sure you've got a decent PC to take full advantage of the looks and feel.

Microsoft £29.99 — **www.microsoft.com** — **Featured:** Issue 8

Enemy Engaged: Comanche vs. Hokum

Strikes the balance between gameplay and realism perfectly. Ideal for both rocket junkies or rotorcraft rookies alike. Only downside is no single mission mode and it's not as pretty as Gunship.

Empire £29.99 — **www.enemyengaged.com** — **Featured:** Issue 5

Tuskegee Fighters

Beautifully designed aircraft and excellent scenery. The great missions add the final touch of genius. One for any CFS fan's must-buy list!

Abacus £29.99 — **www.abacuspub.com** — **Requirements:** CFS — **Featured:** Issue 5

Flanker 2.0

Excellent, with great detail. This is one of the few combat packages that is worth calling a simulation. Online fan base will prolong longevity and interest.

Mindscape £34.99 — **www.ssionline.com** — **Featured:** Issue 2

Janes F/A 18

Technically complex with masses of detail and lots of options. Mission builder is nice. Downside is that it is technically complex and you need a high-spec PC.

Electronic Arts £39.99 — **www.janes.ea.com** — **Featured:** Issue 5

Battle of Britain

Superb flight modelling and the best dynamic campaigns ever are what hardcore dogfighters have been waiting for. Tough on beginners but worth persevering.

Empire £24.99 — **www.empireinteractive.com** — **Featured:** Issue 9

B17-II The Mighty Eighth

Excellent sound, motion animation, outstanding graphics and T&L support, it looks good and flies even better. The ultimate bomber sim, but demanding on hardware and no FF support.

Hasbro £29.99 — **www.b17flyingfortress.com** — **Featured:** Issue 9

Fighter Ace II

If you've got a fast Internet link and you fancy some live (for the moment) opposition, then this is as good an introduction as any to combat on the web. Excellent graphics and a reasonable cost.

Microsoft £6.50 per month — **www.zone.com/fighterace** — **Requirements:** Internet link/modem — **Featured:** Issue 7

Air Power - The Cold War

Nato vs The Warsaw Pact - relive the days when "njet!" meant "get in the bunker, the reds are coming!" Now with CFS missions and campaigns this has evolved into an excellent add-on.

Just Flight £24.99 — **www.justflight.com** — **Requirements:** FS98/2000 or CFS — **Featured:** Issue 7

R.C Simulations

The Hangars, Bristol International Airport, Lulsgate, Bristol, BS48 3EP, United Kingdom.

Tel: 0044 (0)1275 474550 Fax: 0044 (0)1275 474855

Email: sales@rcsimulations.com

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SCENERY AND AIRCRAFT

FS Traffic

Perhaps the best £20 you can spend enhancing Flight Simulator - it really does bring airports to life. Now in boxed and download flavours.

Just Flight £19.99 — **www.justflight.com** — **Requirements:** FS98/2000 — **Featured:** Issue 2

747-400 Professional

Quite simply the best Jumbo add-on for FS2000 we've seen and if you like this you'll also like the 777-200 from the same stable. Read the manual and you'll probably be able to fly the real thing!

Just Flight £34.99 — **www.justflight.com** — **Requirements:** FS2000 — **Featured:** Issue 9

Airport 2000 Volume 2

Incredibly detailed renditions of major airports with decent aircraft and adventures. Sadly a frame-rate hog in both FS98 and 2000 and adventures are complex.

Just Flight £29.99 — **www.justflight.com** — **Requirements:** FS98/2000 — **Featured:** Issue 4

FS Clouds 2000

Fantastic effects with a minimal frame-rate hit and apart from a few graphic glitches it is a worthwhile improvement on Microsoft's own fluffy stuff.

Just Flight £24.99 — **www.justflight.com** — **Requirements:** FS2000 — **Featured:** Issue 6

German Airports 3

Wonderful enhancement for those interested in flying to the Fatherland. Like all beautiful things though, can drain system resources alarmingly.

Aerosoft £24.99 — **www.aerosoft.com** — **Requirements:** FS98/2000 — **Featured:** Issue 4

Mad Dog 2000

Now updated and running in FS2000, a very competent add-on that makes FS2000 feel like a different simulator. Not cheap, but it's much more than just one aircraft.

Lago £34.99 — **www.lagoonline.com** — **Requirements:** FS98/2000 — **Featured:** Issue 7

Private Wings

A quality collection that all virtual pilots interested in light aviation should consider. Only downside is some aircraft do not feature transparent canopies.

Data Becker £19.99 — **www.databecker.com** — **Requirements:** FS2000 — **Featured:** Issue 5

Royal Air Force 2000

Ecletic, yet balanced, mix of aircraft with excellent panels and bonus of missions for CFS users. A few clumsy details on some of the aircraft are the only downers. Now free with PC Pilot!

Just Flight £24.99 — **www.justflight.com** — **Requirements:** FS98/2000 or CFS — **Featured:** Issue 4

737 for Fly!

A meticulous re-creation of the 737-500 for Fly! Superb detailing is only let down by blurry external textures. Not many commercial add-ons for Fly!, so worth having!

Wilco £18.95 — **www.wilcopub.com** — **Requirements:** Fly! or Fly!2K — **Featured:** Issue 6

English Airports

A vast improvement on the default scenery and while it isn't as instantly impressive as some scenery, it actually works in FS2000 without needing a new PC.

Just Flight £19.99 — **www.justflight.com** — **Requirements:** FS2000 — **Featured:** Issue 8

HARDWARE

AFCS II Yoke

Heavy metal control, hand crafted and definitely the Aston Martin of controllers. Eye-watering price to match, so you need to be serious.

AETI £400.00 — **www.simpilot.com** — **Featured:** Issue 3

GeForce 2 GTS

Fantastic performance, a powerful feature set and frequent driver revisions to keep it fresh - probably the current champion (until the next one!)

nVIDIA £205.00 — **www.nvidia.com** — **Featured:** Issue 8

Go Flight GF45

A very useful item - no fuss USB unit that takes the place of on-screen avionics display and keyboard controls - buy five for a full radio stack!

Go Flight £79.95 — **www.goflightinc.com** — **Featured:** Issue 7

Voodoo 5 5500

The last offering from 3dfx, complete with FSAA. Better frame rates and smoother lines, but now 3dfx are defunct they may be hard to find and with varied support.

3dfx £249.00 — **www.3dfx.com** — **Featured:** Issue 6

Logitech Wingman Strike Force 3D

Powerful and smooth force feedback with extensive programmability makes this a wise choice. Shop around as prices vary wildly.

Logitech £89.95 — **www.logitech.com** — **Featured:** Issue 9

OTHER PROGRAMS

SimCharts

Genuine Jeppesen airport charts (to all intents and purposes) at a bargain price. But they're on the CD and you need a decent printer. Treat yourself to the expensive pack and get printed en-route charts too.

Jeppesen £19.99/£29.99 — **www.jeppesenpcpilot.com** — **Featured:** Issue 2

ProFlight 2000

One of the best ATC/adventure generators around, with enough customisation potential for everyone. Plan adventures with real voice ATC - even with amusing 'local' accents.

Just Flight £34.99 — **www.justflight.com** — **Requirements:** FS2000 — **Featured:** Issue 8

Final Approach

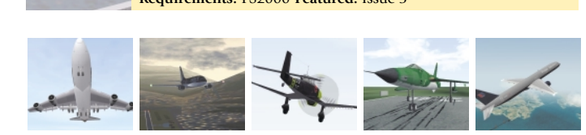
Good value package that not only solves the mystery of IFR approaches, but also provides fistfulls of airport plates too. Not for the casual flyer though.

Just Flight £24.99 — **www.justflight.com** — **Featured:** Issue 5

FS Design Studio Pro

A great package for designing scenery and aircraft. While relatively easy to use it can be tricky to place scenery accurately. Used by many developers, which proves its worth.

Abacus £24.99/£44.99 **www.abacuspub.com** — **Requirements:** FS2000 **Featured:** Issue 5



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THE *ONLY* HUB FOR VIRTUAL AIRLINES

Pilots with stars in their eyes!

Eurostar Aviation Virtual Airline was formed in June 1996 and since then has grown to become the largest pan-European virtual airline, with an emphasis on quality and detail in flight simulation. Eurostar has hired over 500 pilots and has bases in Amsterdam, Barcelona, Hamburg, and London (Gatwick). They were featured in publications such as Der Spiegel, Takeoff Journal, FlightXpress and they can now add PC Pilot to their list of credits.

Eurostar traces its origins to Eurostar Flight School and Air Taxi, virtual entities set up in Lelystad Airport, Netherlands, in June 1996. The initial goal was to deliver to Europe-oriented virtual pilots a highly specialised virtual airline experience, operating over a largely regional network covering the Benelux countries. Since full start-up on October 21st 1996, Eurostar Aviation has grown from a two Cessna 206 operation to a major, award-winning, virtual carrier operating more than 45 aircraft of the best available flight models. They also have their own magazine called Echo Sierra Alpha that you can read at their site.

Derek Smalls

CONTACT DETAILS
Hussam Ali – Managing Director
esamd@hotmail.com
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MORE VAs AROUND THE GLOBE

60th HELICOPTER SUPPORT UNIT
A military style outfit that flies choppers in combat roles.
WEB: www.geocities.com/60thvaw/60thhsu/index.html

AFRICAN EXPRESS (AFEX)
This is a VA operating a realistic and comprehensive network of schedules both within and out of Africa but based in South Africa. They're always looking for pilots so why not give them a look?
WEB: www.afex.co.za

AFRICAN INTERNATIONAL AIRLINES
Heralded as Africa's premier virtual airline, they offer flights throughout the continent - from Cape Town to Cairo. The fleet includes a number of luxury Airbus and Boeing plus some smaller aircraft and rotorcraft.
WEB: www.evalunet.co.za/evalunet/aia/index.htm

AIR JET UK
This airline offers you a gateway to virtual airline flying.
WEB: www.flightsimnetwork.com/airjet/

AIR LINGUS
This airline is based on the real Aer Lingus airline. A must for Irish VA participants.
WEB: http://aeravensis.hypermart.net/main.htm

AIRKENT UK
AirKent is a VA from London. Currently operating the Airbus A320 family and BAe 146s from its main hub, Gatwick South Terminal.
WEB: www.airkentuk.co.uk/

ALASKA VIRTUAL AIRLINES
Based on the real world airline, Alaska Virtual Airlines and Horizon Virtual Airlines have one of the most realistic flight schedules found on the Internet utilising comprehensive flight schedules.
WEB: http://alaska_va.tripod.com/

ATLANTIC AEROSPACE CORPORATION
This virtual company includes the original Atlantic Skies Airline (circa 1996) and now Golden Airlines, Atlantic Charters and New England Express.
WEB: www.atlanticskies.com

BAHAMASAIR VA
Offers world-wide destinations in addition to extensive services in the south eastern United States, Bahamas and surrounding Islands.
WEB: http://cybermoo.net/bahamasair

BRITANNIA VIRTUAL AIRLINES
This VA is based on the real Britannia Airways. They have hubs at Manchester and Gatwick and fly to all the same destinations as the real Britania.
WEB: www.BritanniaVA.co.uk

BRITISH AIRWAYS VIRTUAL
British Airways Virtual started life in April 2000 with the aim of making flying with a virtual airline both a rewarding and enjoyable experience.
WEB: www.bavirtual.co.uk

BROOKS AIR VA
One of the growing band of VAs that are rewarding the skills of their pilots and provide flight plans, adventures competitions and skill tests.
WEB: www.brooksair.co.uk

CALIFORNIA AIR
Operating from the west coast, California Air operates a fleet of jet airliners and are ready to welcome pilots who want to go west.
WEB: www.californiaair.net/

CARGO VA
Another VA that has an award scheme for its pilots and hands out software prizes at regular intervals throughout the year. Based in Manchester and hauling freight worldwide.
WEB: www.cargova.com

DC3 AIRWAYS
This is a novel virtual airline that introduces virtual pilots to the DC-3 and gives them an opportunity to fly this famous aircraft as authentically as possible.
WEB: www.dc3airways.com

EASTERN VIRTUAL AIRLINES
A VA that's been up and running since August last year and that now boasts over 300 pilots in their ranks, Eastern VA have real 757 and 767 pilots available to answer questions.
WEB: www.evair.com/index.htm

EUROPEAN WORLD AIRWAYS
European World Airways is a new VA with hubs based at Heathrow and JFK. The airline serves Europe, the Middle East and America, with their very own training facility.
WEB: www.europeanwa.cjb.net

EUROSTAR AVIATION
This VA describes itself as an award-winning virtual airline with an inclination to detail and professionalism.
WEB: www.esava.net

EXCEL AIR
Serving Milwaukee, Daytona, San Diego, Denver, Dallas/ Ft. Worth, Los Angeles, Atlanta, Boston, Washington DC (DCA), Minneapolis St. Paul, and Phoenix.
WEB: http://ourworld.cs.com/FlyExcelAir

HAWAIIAN AIRLINES VA
A slightly different VA as it's for PCs and Macs but ONLY using PS1 or X-Plane. With a maximum of 16 pilots worldwide Hawaiian is also pretty exclusive. Book him, Danno!
WEB: www.gorji.com/hawaii.html

ICELAND AIR
They fly to most of the major airports on the US east coast, Canada, and Europe using real world routes, time tables and of course the correct fleet of aircraft
WEB: http://icelandair.tripod.com/

JERSEY GROUP OF AIRLINES
A VA group that includes Jersey Euro Link, Jersey Cargo Link, Jersey Sun and is described as "based more on fun and freedom than on regulations".
WEB: http://members.tripod.co.uk/jeurolink

JMC VIRTUAL AIRLINES
JMC are a newly started VA but already growing fast, with many pilots and an in-house aircraft designer. They operate out of Newcastle flying around the world, with a wide selection of aircraft.
WEB: www.virtualjmc.homestead.com/main.html

KNIGHT AIR
This VA has three hubs in the UK and an extensive worldwide route network. They come highly recommended by their members.
WEB: www.knightair.org

MANCHESTER AIRWAYS VA
Manchester Airways is one of the UK's newest generation of Virtual Airlines. With its extensive UK network operating out of Ringway (Manchester).
WEB: www.wayne11.freeserve.co.uk/man/man.htm

NEW YORK CENTRAL & ADIRONDACK VA
New York Central and its sister organization Adirondack Airlines, offer something for all types of pilots. NYC flies to major east coast cities and Adirondack covers the shorter routes.
WEB: www.flightsimmers.net/airport/nva/

PACIFIC BREEZE VA
Pacific Breeze have been running strong for a long period of time. They have over 50 pilots and just recently expanded to world wide travel.
WEB: www.pacbreezeva.com

PACIFIC WEST AIRWAYS
A US-based VA, Pacific West pilots can choose from seven operating hubs, including London Heathrow.
WEB: www.pacificwestairways.com

PARADISE WORLD AVIATION
The staff at Paradise World thinks it's important to reward a pilot who flies for them, so they have a Pilots Reward Program. Pilots are able to get free software and other gifts for their effort.
WEB: www.pwaviation.com

POLAR AIRWAYS VIRTUAL AIRLINE
The Polar Airways hub is based at Amsterdam Schiphol Airport (EHAM) with offices at Almere in the Netherlands.
WEB: www.polarairways.com/

SOLENT AIRLINES
Operating from Southampton, Bournemouth, Southend, London City, Gatwick and Birmingham, Solent have a huge and varied fleet and are always happy to welcome new pilots.
WEB: www.solentairlines.co.uk

TEXAS AIR CARGO
Texas Air Cargo operates out of the new Austin/Bergstrom International Airport at Austin, in the Lone Star state.
WEB: www.geocities.com/texas_air_cargo/

VIRGIN SUN
Based at Birmingham International Airport, they operate from there as well as from London Gatwick to and from sunspots around the globe.
WEB: www.members.aol.com/Afre63456/vvs/

VIRTUAL 2000
Currently they fly to more than 90 destinations in Europe. UK-based.
WEB: www.va2000.org

VIRTUAL AIR COMMAND
Models itself on the real world US Air Force Air mobility Command. Here you can fly all the big USAF heavies.
WEB: www.geocities.com/CapeCanaveral/Campus/6174/

VIRTUAL BRITISH CALEDONIAN AIRWAYS
VBCA is a virtual airline that is targeted towards the UK and European flight simmer.
WEB: www.avsim.com/hangar/air/vbca/index.html

VIRTUAL DELTA AIRLINES
This site is primarily for the aviation enthusiast interested in airline operations, especially Delta airlines.
WEB: http://virtualdelta.cjb.net/

WESTWIND VA
This VA boasts some pretty challenging schedules, with over 3,000 pilots in its ranks. If you're up for it they've got room for more pilots.
WEB: www.flywestwind.com

WINGS INTERNATIONAL ALLIANCE
African Express, among others, are members of this group which is a collection of airlines from around the globe that allow pilots to fly just about anywhere whilst keeping things realistic.
WEB: http://members.xoom.com/wingsint

If you have a virtual airline that is not listed here, the please feel free to send in a short description to mail@pcpilot.net where we will endeavour to include it in a future issue. Also, if you want to earn revenue and prizes for your VA, why not join our affiliates scheme? For more details drop us a mail.

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